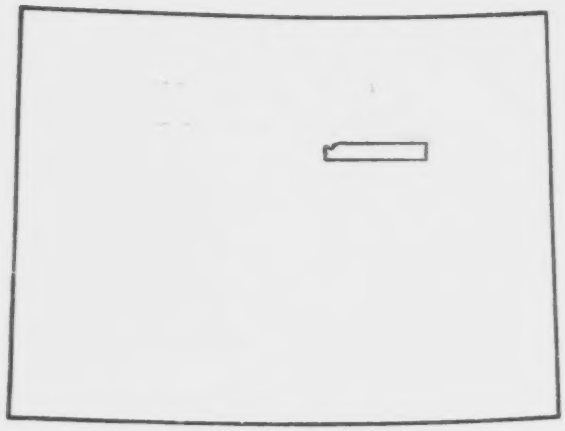
APR 1 1989

FEMA 209 080011 V.1

FLOOD INSURANCE STUDY

ARAPAHOE COUNTY, COLORADO
AND INCORPORATED AREAS
VOLUME 1 OF 2



COMMUNITY NAME	COMMUNITY NUMBER
ARAPAHOE COUNTY, UNINCORPORATED AREAS	080011
CHERRY HILLS VILLAGE, CITY OF	080013
COLUMBINE VALLEY, TOWN OF	080014
ENGLEWOOD, CITY OF	085074
GLENDALE, CITY OF	080247
GREENWOOD VILLAGE, CITY OF	080195
SHERIDAN, CITY OF	080018

APRIL 17, 1989

Federal Emergency Management Agency

NOTICE TO
FLOOD INSURANCE STUDY USERS

Communities participating in the National Flood Insurance Program have established repositories of flood hazard data for floodplain management and flood insurance purposes. This Flood Insurance Study may not contain all data available within the repository. It is advisable to contact the community repository for any additional data.

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FLOOD INSURANCE STUDY
ARAPAHOE COUNTY, COLORADO AND INCORPORATED AREAS

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study investigates the existence and severity of flood hazards in the geographic area of Arapahoe County, Colorado, including the Cities of Aurora, Bow Mar, Cherry Hills Village, Englewood, Greenwood Village, Glendale, Littleton, and Sheridan; the Towns of Bow Mar, Columbine Valley, and Deer Trail; and the unincorporated areas of Arapahoe County (hereinafter referred to collectively as Arapahoe County), and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. (Flood hazard information presented in this study for the Cities of Aurora and Littleton has been included for information purposes only.) This study has developed flood risk data for various areas of Arapahoe County that will be used to establish actuarial flood insurance rates and assist the community in its efforts to promote sound floodplain management. Minimum floodplain management requirements for participation in the National Flood Insurance Program (NFIP) are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

In some states or communities, floodplain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence and the State (or other jurisdictional agency) will be able to explain them.

1.2 Authority and Acknowledgments

The sources of authority for this Flood Insurance Study are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

The original hydrologic and hydraulic analyses for the Flood Insurance Study for the unincorporated areas of Arapahoe County were performed by Gingery and Associates, Inc., for the Federal Insurance Administration (FIA), under Contract No. H-3716. This work was completed in July 1975 (Reference 1).

Hydrologic and hydraulic information for portions of Bear Creek, Big Dry Creek, Blackmer Gulch, Cherry Creek, Dutch Creek, Granby Ditch, Goldsmith Gulch, West Tributary to Goldsmith Gulch, Greenwood Gulch, Lee Gulch, Little Creek, Little Dry Creek, Quincy Gulch, Sable Ditch and Sable Ditch Overflow, Sand Creek, Slaughterhouse Gulch and its South Tributary, Toll Gate Creek, West Toll Gate Creek, West Toll Gate Creek Tributary, East Toll Gate Creek, Unnamed Creek, West Bijou Creek, Westerly Creek, Columbia

Creek, and Side Creek and its Tributary were taken directly from the existing Flood Insurance Studies for Aurora, Cherry Hills Village, Columbine Valley, Englewood, Creenwood Village, Littleton, and Sheridan (References 2 through 9, respectively).

The hydrologic and hydraulic analyses for portions of First, Piney, Murphy, Lone Tree, Happy Canyon, Cottonwood and Little Creeks and Lee Gulch were performed by J.F. Sato and Associates, for the Federal Emergency Management Agency (FEMA), under Contract No. EMW-84-C-1631. This work was completed in August 1985 (References 10, 11, 12, 13, 14, 15, and 16).

The hydraulic analyses for a portion of Cherry Creek extending from Cherry Creek State Recreation Area to the Arapahoe Douglas County line were performed by Greiner Engineering, as reported in River Run Development, Letter of Map Revision, Arapahoe County, Colorado, (Reference 17).

The revised hydraulic analyses for portions of East Tollgate and West Tollgate Creeks were performed by Merrick and Company, Greiner Engineering, and the City of Aurora Engineering Division (References 18, 19, 20, 21, and 22).

The hydraulic analysis for a portion of Unnamed Creek was performed by Holland Corporation (Reference 23).

The hydrologic study of the South Platte River, from Chatfield Dam to the corporate limits of the City and County of Denver, was prepared by Merrick and Company, under contract to the Colorado Urban Drainage and Flood Control District (UDFCD), and was completed in May 1983.

The hydraulic analyses for the South Platte River, from the corporate limits of the City and County of Denver, upstream to the U.S. Army Corps of Engineers (COE) Channel Improvement Project, were performed by Wright Water Engineers, under contract to UDFCD, and were completed in September 1985. The hydraulic analyses of the COE Channel Improvement Project were also performed by Wright Water Engineers under contract to UDFCD (completed in September 1987). The hydraulic reanalyses of the South Platte River, from the COE Channel Improvement Project (Fairway Lane) upstream to the Chatfield Dam, were based on the COE September 1979 hydraulic computer model, using the discharges determined by the May 1983 Merrick hydrologic study and was carried out by the FEMA Technical Evaluation Contractor, in November 1987.

1.3 Coordination

The Arapahoe County Planning Department supplied zoning and corporate boundary maps for areas throughout the county. Conferences were held with the County staff on June 5, July 15, and July 24, 1975. The final community coordination meeting for the original study of the unincorporated areas was held on September 16, 1975.

The COE, Omaha District, supplied base mapping, hydrologic input, and information on Chatfield Dam for the study reach of the South Platte River. In addition, conferences were held with the COE, Omaha District, on October 16, 1974, November 27, 1974, and March 21, 1975. Of particular significance to this study was a COE floodplain information study of the Denver Metropolitan Region, dated October 1968 (Reference 24) and a Floodplain Information report prepared by the COE, dated July 1971 (Reference 25).

The U.S. Geological Survey (USGS) was contacted to obtain historical flow data (References 26, 27, and 28). Maps of flood-prone areas prepared by the USGS, showing approximate floodplain boundary delineations at a scale of 1:24,000, were also reviewed (Reference 29).

At a meeting on August 16, 1974, attended by representatives of UDFCD, FIA, and Gingery Associates, Inc., the study reaches were clearly explained with the methodology to be used in the study. An additional meeting was held on January 24, 1975, to further clarify the purpose of the study and methods used for floodplain delineation. UDFCD supplied contour maps at 2-foot intervals for Big Dry Creek, Sand Creek, and Coal Creek along with an interim report entitled Major Drainageway Master Plan--Big Dry Creek (Reference 30).

Numerous other agencies and individuals were contacted for background information, including the Colorado Water Conservation Board (CWCB), which provided published rainfall-runoff data (Reference 31); Colorado Highway Department; Union Pacific Railroad; and U.S. Soil Conservation Service (SCS). Private citizens of Watkins, Strasburg, Byers, and Deer Trail were interviewed regarding past floods, high-water marks, and flood damage.

Prior to the restudy, a meeting was held in early April 1984 with the Arapahoe County Engineering Department and UDFCD to define study reaches; however, no reaches were identified at this meeting. The study reaches were selected at a meeting in late April 1984 attended by the study contractor and FEMA.

An intermediate community coordination meeting for the restudy was held in July 1985 and attended by the County, the study contractor and the FEMA representative to explain the reaches studied and the methods used.

UDFCD provided copies of previous master plans and flood hazard delineation maps that covered some of the stream reaches being studied. The County provided up-to-date road maps and corporate boundary maps.

FEMA authorized a countywide restudy for Arapahoe County in December 1985.

2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers the geographic area of Arapahoe County, Colorado. The area of study is shown on the Vicinity Map (Figure 1).

In addition to the South Platte River, the following streams were studied by detailed methods and are included in this study: Bear Creek, Big Dry Creek, Big Dry Creek Tributary A, Blackmer Gulch, Box Elder Creek, Cherry Creek, Coal Creek, Comanche Creek, Little Comanche Creek, Coon Creek, Cottonwood Creek, Dutch Creek, First Creek, Granby Ditch, Goldsmith Gulch, West Tributary Goldsmith Gulch, Greenwood Gulch, Happy Canyon Creek, Lee Gulch, Little Creek, Little Dry Creek, Lone Tree Creek, Murphy Creek, Piney Creek, Prentice Gulch, Quincy Gulch, Sable Ditch, Sable Ditch Overflow, Sand Creek, Slaughterhouse Gulch, South Tributary to Slaughterhouse Gulch, SJCD 6100, SJCD 6200, Spring Creek, West Toll Gate Creek, West Toll Gate Creek Tributary, Unnamed Creek, West Bijou Creek, Westerly Creek, and Willow Creek.

The tributary streams studied using approximate methods are as follows: Upper reaches of Piney Creek and Coal Creek, Lone Tree Creek, Senac Creek, 1-05-4612 Creek, West Box Elder Creek, Box Elder Creek, Kiowa Creek, Wolf Creek, Comanche Creek, Little Comanche Creek, West Bijou Creek, Middle Bijou Creek, East Bijou Creek, Muddy Creek, and Deer Trail Creek. No development pressures are foreseen on these streams for the next 5 years.

On the South Platte River, just upstream of the City of Littleton, the COE has constructed Chatfield Dam. The primary purpose of the dam is flood-control and recreation. The dam is now operational for flood-control purposes and, therefore, flood hazards downstream are based on the dam's operation.

This study also illustrates the flood hazard delineations resulting from a channel improvement project developed by the COE, Omaha, Nebraska.

The areas studied by detailed methods were selected with priority given to all known flood hazard areas and areas of projected development or proposed construction through 1991.

Approximate analyses were used to study those areas having a low development potential or minimal flood hazards. The scope and methods of study were proposed to, and agreed upon by, FEMA and Arapahoe County.

2.2 Community Description

Arapahoe County is located in central Colorado, just south and east of Denver. The general physical boundary is that of a rectangle 12

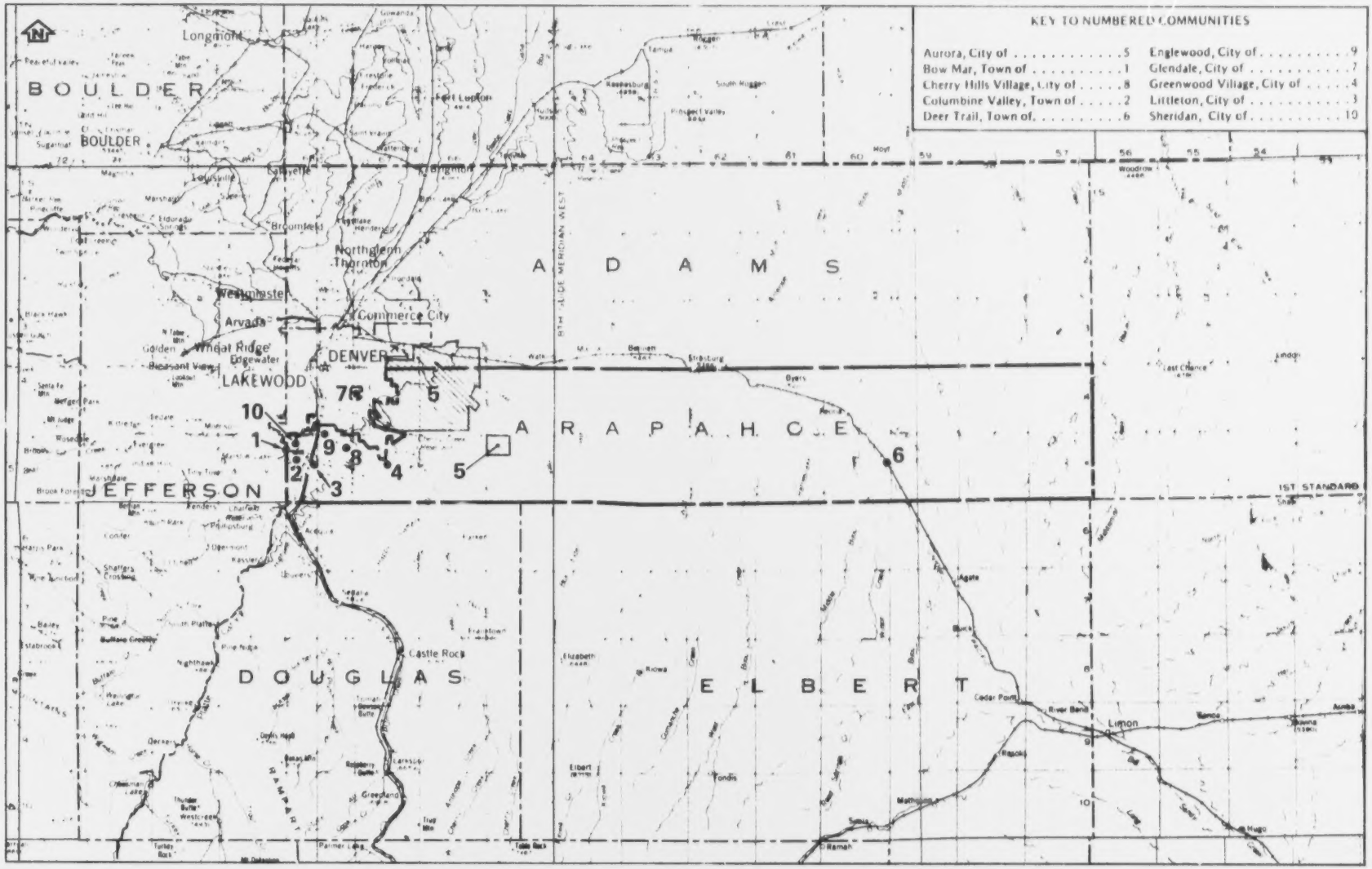

FIGURE 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
AND INCORPORATED AREAS

APPROXIMATE SCALE

20 0 20 40 60 MILES

VICINITY MAP

miles by 72 miles, which extends from near the foothills of the Rocky Mountains to the open plains of eastern Colorado, covering approximately 864 square miles.

The climate in Arapahoe County varies slightly from the Denver metropolitan area to the prairie lands on the eastern end; but, generally, it is characteristic of the temperate high plains. The mean annual temperature is 50.2°F; the mean annual snowfall is 45 inches, and the mean annual rainfall is 14.05 inches. With a mean growing season of 139 days, agriculture flourishes.

Arapahoe County was the first designated county in Colorado even though at that time (1858), the county, which comprised over one-fifth of the present State of Colorado, was in the western part of the Kansas Territory. From then until April 1903, the county changed shape and size many times and on two occasions was nonexistent. Arapahoe County was visited by many explorers and trappers until gold was discovered at the mouth of Little Dry Creek, after which intensive growth was experienced throughout the region. The territory in and around Arapahoe County also became known as one of the greatest cattle ranch areas in the west. With the advent of the railroads, towns like Deer Trail became the natural termination points for cattle drives originating in Texas.

Today, Arapahoe County is still basically an agricultural and residential community, with most of the population concentrated in the western one-third of the county. During the past 25 years, the county population has grown rapidly as a result of Denver metropolitan area urbanization and subsequent extensive suburban development. County population figures for 1970 and 1980 are 161,000 and 293,621, respectively. This kind of suburban development pressure is now, and will continue to be, evident in and along the floodplains of Big Dry Creek, Little Dry Creek, Cottonwood Creek, Cherry Creek, Piney Creek, Sand Creek, Coal Creek, and the South Platte River. Residential growth has also occurred along the banks of Box Elder Creek and Comanche Creek.

The county lies within the South Platte River Basin, with headwaters extending into the Rocky Mountains to elevations of 14,000 feet. The waters of the South Platte River have been appropriated for municipal and irrigation usage. The South Platte River in Arapahoe County flows from south to north along the western edge of the county.

The South Platte River in Arapahoe County is a continuous flowing stream, whereas the tributaries are intermittent flowing streams. The South Platte River has two major flooding characteristics--snowmelt and summer thunderstorms. The tributary basins are narrow and have clayey-loam soils. In the undeveloped portions of the basins, the ground cover consists of buffalo grass, willows, and cottonwood trees.

Development has occurred up to the channels on the tributaries. The floodplain on the South Platte River in the past was mostly

agricultural, but today commercial, industrial, and residential development has encroached onto the floodplain. In various reaches of the floodplains, development pressures continue to exist. The county government is working to retain the open space of the floodplain areas.

2.3 Principal Flood Problems

The South Platte River flows through the western edge of Arapahoe County in shifting channels in a broad, shallow bed with low, flat overbanks. Streams tributary to the South Platte River are ephemeral and flow in steep, narrow channels; whereas those in the eastern two-thirds of the county flow in wide, flat channels similar to the South Platte River.

All streams studied have had various structural improvements but the intense and infrequent thunderstorms characteristic of the area can generate floods in excess of existing structural capacities. The flood threat throughout the county has not been adequately defined and urbanization has occurred in certain areas without regard to the hazard.

Major floods have occurred on the South Platte River and its tributaries in Arapahoe County since 1844. During the period, 11 devastating floods have occurred on the South Platte River; 17 have occurred on Cherry Creek; and 3 each have occurred on Box Elder, Comanche, and Bijou Creeks. Historic flood information on other streams in Arapahoe County is not available.

In 1844 and 1864, reports read, "bottomlands near Denver were covered with water bluff to bluff." By 1876, encroachment into the floodplain had developed to such an extent that on May 23, 1876, the Rocky Mountain News reported, "(The South Platte River) was higher to be sure--several feet higher perhaps in 1864--but it was not able to work such destruction at that time as now. There was not so much town here in 1864, as now, nor as many bridges."

The most significant floods of recent times on the South Platte River occurred in 1912, 1921, 1933, 1935, 1942, and 1965 during which discharges of 13,000 cubic feet per second (cfs), 8,790 cfs, 22,000 cfs, 12,320 cfs, 10,200 cfs, and 40,300 cfs, respectively, were recorded. Cherry Creek experienced a similar flood history, with discharges of 25,000 cfs, 34,000 cfs, 10,700 cfs, 17,600 cfs, 10,800 cfs and 39,900 cfs in 1912, 1933, 1945, 1946, 1963, and 1956, respectively.

In interviews held in Watkins, Strasburg, Byers, and Deer Trail regarding flood histories on Box Elder Creek, Comanche Creek, West Bijou Creek, and East Bijou Creek, residents recalled severe damage and lost lives in floods occurring in 1905, 1935, and 1965.

All of these floods of record on the South Platte River and tributaries have been generated near their headwaters on the slopes of Monument Divide, a high ridge located between Castle Rock and

Colorado Springs and extending from the Rocky Mountains down into the plains near Limon, Colorado. Past floods of the mountain tributaries have resulted from snowmelt. Intensive rainstorms cause flooding in both the mountain tributaries and the eastern tributaries.

In 1912, Cherry Creek swelled to flood stage from cloudbursts centered simultaneously over Denver and the upper reaches of the creek. In 1933, similar circumstances caused the Castlewood Dam above Franktown in Douglas County to fail, sending a 34,000-cfs flow of water thundering down the canyon into Denver.

In 1965, the whole South Platte River Basin was drenched by a unique combination of orographic effects and meteorological conditions that caused the worst flooding in the region's recorded history. Severe thunderstorms had formed over the headwaters of Plum and Cherry Creeks on June 16 and slowly moved northeasterly down the creeks; thus, the heavy rains tended to follow and augment the peak flows. More than 14 inches of rain fell near Monument Divide at Palmer Lake in 4 hours. Overnight, westerly winds shifted the storm front to an orientation over the Kiowa and Bijou Creek basins to meet with thunderstorms forming just south of Agate, where 5.25 inches fell in 45 minutes. The net result was six persons drowned, two other deaths caused by flood-related activities, and estimated damages in the Denver area were $500 million.

Flood problems in the area have been the result of not only rare storm events but also of improper floodplain development. Visual accounts of floods have noted that the debris transported by floodwater contained natural debris, such as trees, rock, and soil, but consisted chiefly of items foreign to the floodplain, such as houses, bridges, automobiles, heavy equipment, lumber, house trailers, butane storage tanks, and other flotsam. With these items obstructing bridges and culverts, flood levels rose and caused more extensive damage. Property which was not structurally damaged by flood depths and velocities experienced much damage and cleanup cost resulting from mud and silt deposition and erosion.

Scenes of past flooding in Arapahoe County are shown in Figures 2 and 3. The pictures were taken from photographic records of the Denver Post and the Arapahoe County Planning Department.

2.4 Flood Protection Measures

The first tangible contribution to flood control on the streams flowing through Arapahoe County was made in 1890, when Castlewood Dam, primarily intended for irrigation storage, was completed by the Denver Land and Water Company on Cherry Creek, 35 miles upstream from Denver. The dam, with a storage capacity of 4 billion gallons, was mistakenly regarded by many as protection against deluges. In August 1933, the dam burst under pressure of water from severe thunderstorms in the upper Cherry Creek basin. Flood-control measures were taken on Cherry Creek in 1936 with the

Figure 2. South Platte River Just South of West Bowles Avenue, June 17, 1965

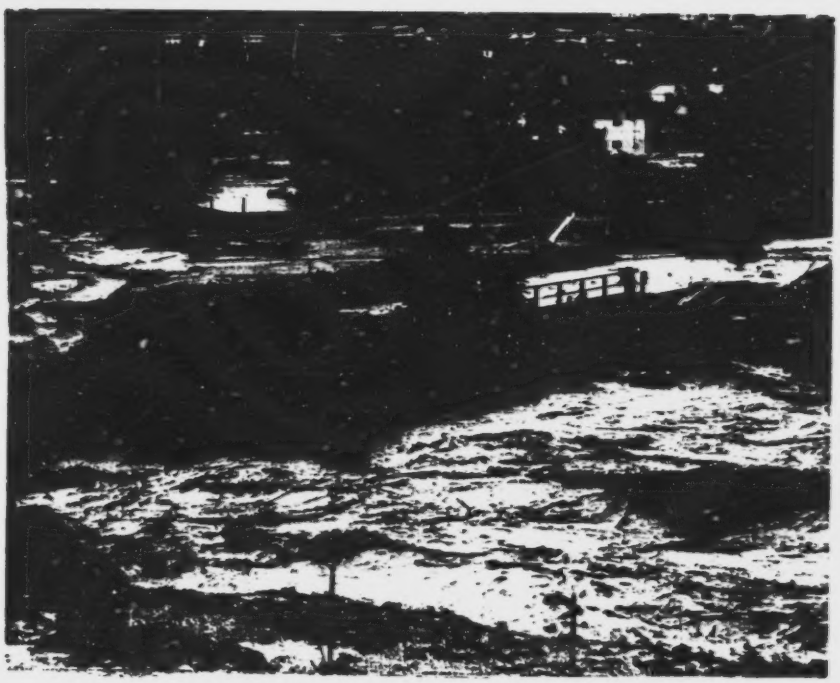

Figure 3. Plum Creek at Third Street in Castle Rock, Colorado June 18, 1965

completion of the $800,000, 55-foot-high Kenwood Dam, 5 miles southeast of Denver, near Sullivan, Colorado. Despite its apparent guarantee of security, Kenwood Dam was not regarded as the complete answer to flood control on Cherry Creek and was abandoned. In 1950, Cherry Creek Dam was constructed just upstream of the former Kenwood Dam at a cost of $20 million. The dam spans 14,300 feet across the creek at a height of 140 feet, and now serves the community as a park and water recreation area as well as a retarding barrier for floods much larger than the event of June 1965. Cherry Creek Dam was designed and built by the COE to store the Standard Project Flood, which is approximately equivalent to the 500-year flood. The dam eliminates the flood potential from 385 square miles of the total drainage area of 409 square miles.

With the history of major flooding on the South Platte River through 1933, culminating in the planning, design, and construction of the Cherry Creek Reservoir in 1950, citizens of the Denver metropolitan area saw the need for an additional flood-control structure on the South Platte River, just downstream of the confluence with Plum Creek. During the 1950s, the planning and design for a flood-control reservoir were completed for Chatfield Dam. At that time, however, funding was not available to initiate and complete construction. The floods of 1965 changed the minds of many concerning the need for the structure. The loss of 8 lives and property damage assessed at $300 million in the Denver area prompted the release of funds and construction began. In 1973, final closure of the dam was made and the facility became capable of storing tributary floodwater. All the related reservoir improvements, including recreational facilities, became totally operational in 1976. Chatfield Dam is located approximately 0.5 mile above the City of Littleton corporate limits, in Douglas and Jefferson Counties. The reach of the the South Platte River lying within Arapahoe County will still experience flooding from tributary streams at Littleton and downstream.

To assist the COE with needed flood-control measures along the 6.4 miles of the South Platte River that lie adjacent to the City of Littleton, in Arapahoe County, citizens of Littleton voted in 1971 to provide funds to assist the COE in implementing a mutually satisfactory project for flood control (References 32 and 33). In 1984, the City acquired and annexed property included within the 100-year floodplain limit within this 2-mile reach, and plans to retain the rural, open-space environment of the area.

On the remaining 4.4 miles of the South Platte River that are located in Arapahoe County and the City of Littleton, the COE had proposed a structural solution to flood control, incorporating channelization and diking. State funds have been appropriated for right-of-way acquisition and construction, for the purpose of this study, has been completed. The resulting channelization project contains the accepted 100-year flood discharge and, therefore, this segment of the river presents minimal flood hazard to the county and affected communities.

Major drainageway planning reports have been completed for Little Dry Creek, Sand Creek, and Big Dry Creek (References 30, 34, and 35). These reports designate various structural measures and nonstructural actions that would be appropriate to alleviate potential flood damage along these streams.

3.0 ENGINEERING METHODS

For the flooding sources studied in detail in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude which are expected to be equaled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10, 2, 1, and 0.2 percent chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long-term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood which equals or exceeds the 100-year flood (1 percent chance of annual exceedence) in any 50-year period is approximately 40 percent (4 in 10), and, for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for each flooding source studied in detail affecting the geographic area of Arapahoe County.

Recorded flood information for the majority of the streams studied by detailed methods within Arapahoe County is nonexistent. Good records do exist for the South Platte River and Cherry Creek. Due to the construction of Chatfield Dam, the recorded information on the South Platte River is not applicable. As a result, synthetically derived hydrographs were computed to determine potential flood magnitudes for those streams with relatively small drainage basins in the Denver metropolitan area. These hydrographs reflect the effects of precipitation, ground cover, slope, drainage area, and other physical characteristics of the drainage basins. The synthetic hydrograph method was used on Big Dry Creek, Piney Creek, Cottonwood Creek, Murphy Creek, Cherry Creek, and South Platte River. Where available, hydrologic data were compared with other studies completed in the area (References 30, 34, and 35).

For the large drainage basins to the east of the Denver metropolitan area, flood magnitudes for the selected frequencies

were computed using the USGS regional analysis outlined in Water Supply Paper 1680 (Reference 36) for Region B, Area 10. The relationship between flood magnitude and frequency, as portrayed in the composite frequency curve in Water-Supply Paper 1680, was extrapolated to give a ratio of 100-year flood discharge to mean annual discharge as the basis for the regional curve in Figures 4, 5, 6, and 7. The streams whose hydrology was derived from this regional analysis were the upper reaches of Piney Creek and Coal Creek, Lone Tree Creek, Senac Creek, 1-05-4412 Creek, West Box Elder creek, Box Elder Creek, Kiowa Creek, Wolf Creek, Comanche Creek, Little Comanche Creek, West Bijou Creek, Middle Bijou Creek, and Deer Trail Creek. This curve was used as a comparison for synthetically generated hydrograph flows for each stream in the study. For some streams, the 100-year flood discharge generated by hydrograph methods is higher than the curve would indicate due to the effects of recent urbanization.

The South Platte River peak discharges for the 100- and 500-year floods below the dam were computed to reflect information on the operation of Chatfield Dam. For that reason, the South Platte River does not match the USGS regional data.

Rainfall data for the synthetic hydrologic analyses was taken from the UDFCD Urban Storm Drainage Criteria Manual (Reference 37).

Synthetic hydrograph procedures used in the study included the Colorado Urban Hydrograph Procedure (CUHP), outlined in the UDFCD Manual (Reference 37), and the COE HEC-1 Flood Hydrograph Package (Reference 38).

The 500-year flood discharges for all detailed-study streams were checked by straight-line extrapolation of frequencies previously determined using the procedure of the USGS (References 27 and 36), and compared to the COE Standard Project Flood data when available.

Hydrologic analyses included in the Flood Insurance Studies for the incorporated communities of Aurora, Cherry Hills Village, Littleton, and Sheridan were incorporated into the restudy in their entirety with the exception of streams or portions of streams which were superseded by more up-to-date information (References 2, 3, and 5 through 9).

In addition, hydrologic data from various engineering reports (discussed in Section 7.0) were used extensively in the restudy of Arapahoe County. The methods used in these reports include CUHP, MITCAT, and Stormwater Management Model (References 10, 11, 12, 13, 14, 15, and 16).

Peak discharge-drainage area relationships for the streams studied by detailed methods within Arapahoe County, except Spring Creek and SJCD 6100, are shown in Table 1 and Figures 4, 5, 6, and 7.

Table 1. Summary of Discharges

Flooding Source and Location	Drainage Area (Square Miles)	Peak Discharge (cfs) 10-Year	50-Year	100-Year	500-Year
Bear Creek					
At Mouth	22	4,170	6,920	8,150	11,280
Big Dry Creek					
Above Windermer Street	11.0	5,100	7,000	8,100	13,100
At Confluence With South Platte River	19.0	7,100	9,100	10,400	17,200
At Littleton Boulevard	19.5	7,000	9,250	10,400	10,750
Blackmer Gulch					
At Confluence With Greenwood Gulch	2.3	1,390	1,850	1,950	2,330
At Confluence With Quincy Gulch	1.5	780	1,040	1,100	1,330
At Holly Street	0.5	385	500	540	640
Cherry Creek					
At Downstream Limit of Study	340	10,300	31,000	51,000	150,000
At Upstream Limit of Study	169	3,300	9,300	13,300	63,000
Cherry Creek Spillway Drain					
At Mouth	1.9	610	2,100	3,180	7,700
Coon Creek					
At Confluence With Dutch Creek	--[1]	--[1]	--[1]	2,900	--[1]
Dutch Creek					
Upstream of Platte Canyon Road	--[1]	--[1]	--[1]	7,400	--[1]

[1]Data Not Available

Table 1. Summary of Discharges (Cont'd)

Flooding Source and Location	Drainage Area (Square Miles)	Peak Discharge (cfs) 10-Year	50-Year	100-Year	500-Year
First Creek					
Upstream of Smith Road	--[1]	1,930	--[1]	4,000	--[1]
Granby Ditch					
At Mouth	3.74	1,800	2,460	2,775	3,450
Above Confluence With Sable Ditch	2.28	935	1,280	1,445	1,800
At Colfax Avenue	1.96	800	1,200	1,380	1,710
AT Laredo Street	1.38	675	950	1,085	1,380
Goldsmith Gulch					
At Belleview Road	2.6	1,270	1,950	2,250	3,050
West Tributary to Goldsmith Gulch					
At Orchard Road	1.3	530	840	1,000	1,380
Greenwood Gulch					
At Belleview Road	3.3	1,800	2,550	2,750	3,200
At Confluence With Prentice Creek	2.7	1,700	2,300	2,450	2,800
At Orchard Road	1.2	1,100	1,500	1,600	1,850
Happy Canyon Creek					
Upstream of Confluence With Cherry Creek	--[1]	--[1]	--[1]	3,690	--[1]
Lee Gulch					
At Confluence With South Platte River	2.5	1,900	2,500	2,900	4,500
Little Creek					
At Confluence With South Platte River	2.3	1,800	2,300	2,800	4,200

[1]Data Not Available

Table 1. Summary of Discharges (Cont'd)

Flooding Source and Location	Drainage Area (Square Miles)	Peak Discharge (cfs) 10-Year	50-Year	100-Year	500-Year
Little Dry Creek					
At Mouth	14.0	4,500	5,990	6,650	8,000
At Martin Lane	6.7	2,420	3,210	3,450	4,150
At Belleview Road	5.7	2,300	3,380	3,600	4,100
At Orchard Road	4.6	2,100	2,900	3,100	3,500
Lone Tree Creek					
Downstream of Arapahoe Airport Runway	--[1]	--[1]	--[1]	850	--[1]
At Cherry Creek Recreation Area Boundary	--[1]	--[1]	--[1]	2,000	--[1]
Prentice Gulch					
At Mouth	0.8	640	870	920	1,030
Quincy Gulch					
At Confluence With Blackmer Gulch	0.8	610	810	850	1,000
At South Bellaire Street	0.4	320	420	445	550
Sable Ditch					
Above Confluence With Granby Ditch	1.46	910	1,250	1,405	1,760
At Colfax Avenue	1.02	730	1,030	1,030	1,410
Sand Creek					
At Mouth	147	10,000	22,000	29,000	55,000
At Colfax Avenue	97	6,700	15,900	21,500	45,000
Slaughterhouse Gulch					
At Confluence With South Platte River	2.0	1,400	1,700	2,000	2,900
South Tributary to Slaughterhouse Gulch					
At Confluence With Slaughter-house Gulch	0.37	438	520	550	720

[1]Data Not Available

Table 1. Summary of Discharges (Cont'd)

Flooding Source and Location	Drainage Area (Square Miles)	Peak Discharge (cfs) 10-Year	50-Year	100-Year	500-Year
SJCD 6200					
Upstream of Platte Canyon Road	--[1]	--[1]	--[1]	2,441	--[1]
South Platte River					
Approximately 100 Feet Downstream of Confluence With Bear Creek	--1	4,900	10,900	14,600	25,000
Just Upstream of Confluence With Bear Creek	--1	4,900	10,300	13,500	23,000
Just Downstream of Confluence With Big Dry Creek	--1	4,300	9,500	12,700	22,000
Approximately 100 Feet Upstream of Confluence With Big Dry Creek	--1	3,300	6,900	8,900	15,000
Approximately 100 Feet Downstream of Confluence With Dutch Creek	--1	2,700	5,000	6,400	10,000
Just Upstream of Confluence With Dutch Creek	--1	1,300	2,200	2,700	4,000
Toll Gate Creek					
At Mouth	41	4,400	15,500	24,000	57,000
At East 6th Avenue	34.7	4,050	13,900	21,200	52,000
West Toll Gate Creek					
At East Mississippi Avenue	17.9	2,950	10,000	15,200	37,000
Below Confluence With West Toll Gate Tributary	16.9	2,800	9,400	14,400	35,000
At Buckley Road	14.8	2,150	7,300	11,200	27,400
Below Confluence With Unnamed Creek	13.1	1,100	3,650	5,900	14,000
At East Quincy Avenue	4.5	1,100	3,650	4,500	14,000
West Toll Gate Tributary					
At Mouth	2.6	610	1,950	3,100	7,400
East Toll Gate Creek					
Above Confluence With West Toll Gate Creek	10.8	1,420	4,800	7,500	18,500
At Conflunece With Side Creek	8.9	1,600	5,400	8,100	19,300

Table 1. Summary of Discharges (Cont'd)

Flooding Source and Location	Drainage Area (Square Miles)	Peak Discharge (cfs) 10-Year	50-Year	100-Year	500-Year
Unnamed Creek					
At Mouth	6.1	1,150	3,900	6,000	14,200
Westerly Creek					
At 14th Avenue	10.8	2,700	4,200	5,000	6,800
At Pond A-B	5.8	400	1,150	1,650	2,600
Willow Creek					
Upstream of Englewood Dam	9.41	--[1]	--[1]	6,400	--[1]

[1]Data Not Available

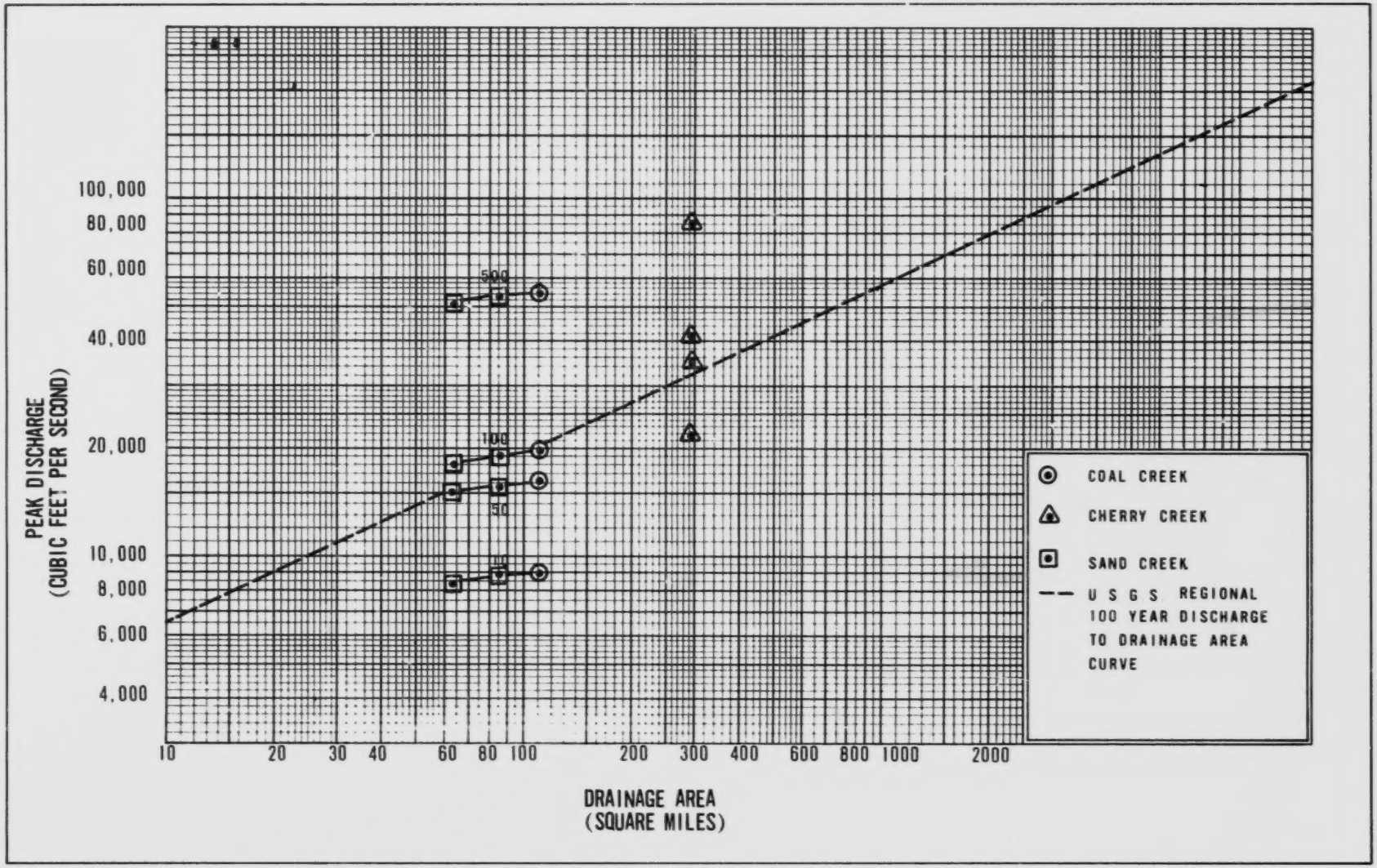

FIGURE 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
AND INCORPORATED AREAS

FREQUENCY-DISCHARGE, DRAINAGE AREA CURVES

COAL CREEK, CHERRY CREEK, SAND CREEK

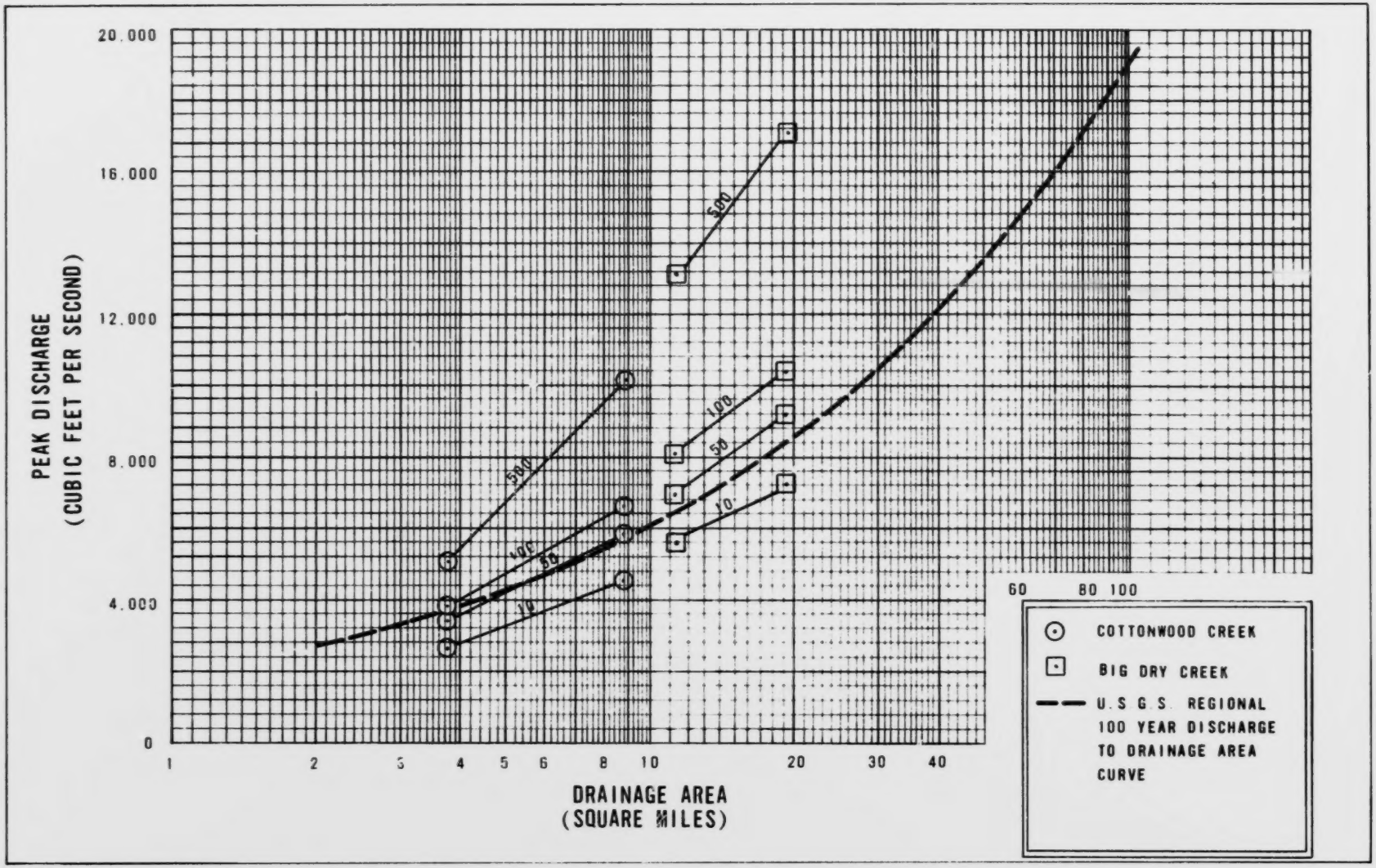

FIGURE 5

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
AND INCORPORATED AREAS

FREQUENCY-DISCHARGE, DRAINAGE AREA CURVES

COTTONWOOD CREEK, BIG DRY CREEK

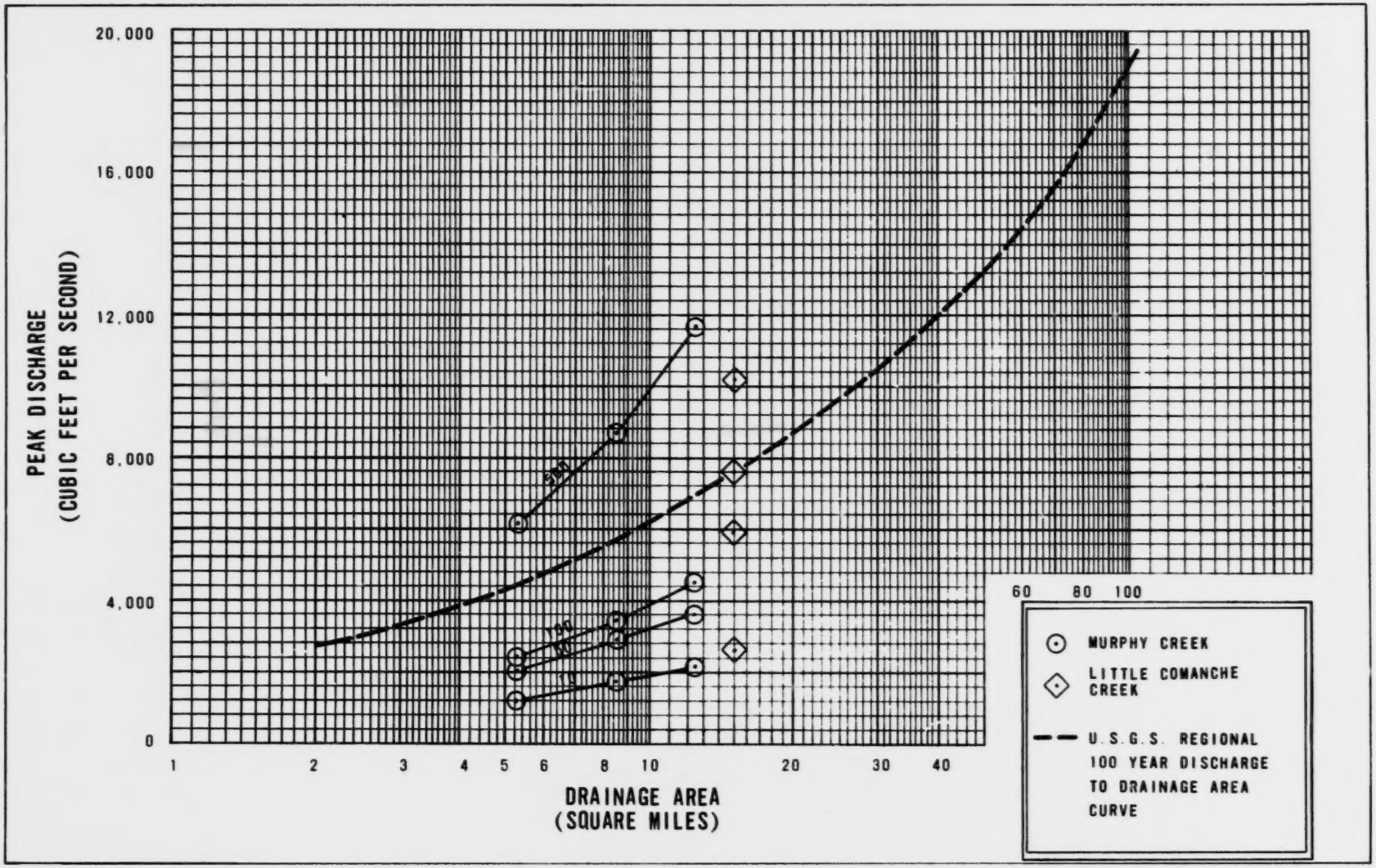

FIGURE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
AND INCORPORATED AREAS

FREQUENCY-DISCHARGE, DRAINAGE AREA CURVES

MURPHY CREEK, LITTLE COMANCHE CREEK

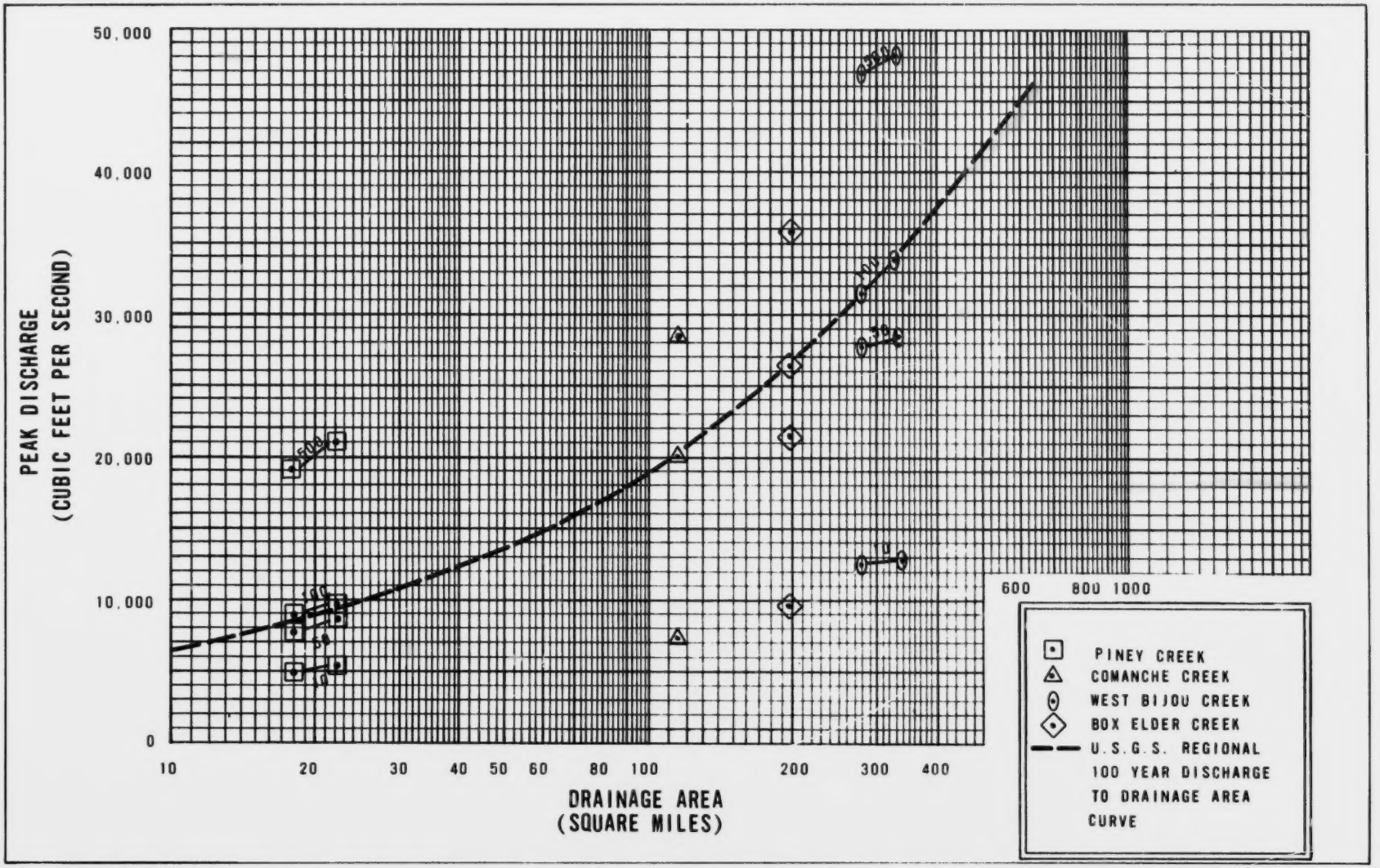

FIGURE 7

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
AND INCORPORATED AREAS

FREQUENCY-DISCHARGE, DRAINAGE AREA CURVES

PINEY CREEK , COMANCHE CREEK
WEST BIJOU CREEK , BOX ELDER CREEK

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals.

Water-surface elevation of floods of the selected recurrence intervals were computed through the use of the COE HEC-2 step-backwater computer program (Reference 38). Starting water-surface elevations for the tributaries of the South Platte River were taken from previously computed stage-discharge relationships when available. In many cases, control elevations were shifted upstream to bridges or culverts. Where no other information or control structures were available, the starting water-surface elevations were computed by the slope-area method option of the HEC-2 program.

Detailed cross section data for Cottonwood Creek, Cherry Creek, Piney Creek, Murphy Creek, Coal Creek, Comanche Creek, Little Comanche Creek, West Bijou Creek, and Box Elder Creek were field surveyed and were located at close intervals above and below culverts in order to compute the effects of backwater. For Little Dry Creek, Big Dry Creek, and Sand Creek, cross sections were taken from detailed topographic maps (References 30 and 34). Detailed mapping of the South Platte River was secured from the COE. The USGS topographic mapping, at a scale of 1:24,000, with a contour interval of 10 feet, was used to supplement field survey data (Reference 29).

Hydraulic analyses included in the Flood Insurance Studies for the incorporated communities of Aurora, Cherry Hill Village, Columbine Valley, Englewood, Greenwood Village, Littleton, and Sheridan were incorporated into the restudy in their entirety with the exception of streams or portions of streams which were superseded by more up-to-date information (References 2, 3, and 5 through 9).

Hydraulic analyses for portions of First Creek, Piney Creek, Murphy Creek, Lone Tree Creek, Happy Canyon Creek, Cottonwood Creek, Lee Gulch, and Little Creek were taken from published UDFCD reports (References 10, 11, 12, 13, 14, 15, and 16).

Additional hydraulic analyses from the various engineering reports discussed in Section 7.0 have been incorporated into the Arapahoe County restudy.

Hydraulic analyses for portions of Big Dry Creek Tributary B, East Tributary to West Toll Gate Creek, First Creek, Sampson Gulch, and Senac Creek were performed using topographic maps at a scale of 1:24,000, with a contour interval of 10 feet (Reference 39). Field surveyed cross sections were used and normal-depth calculations were performed in order to obtain top widths at the selected cross sections.

Cross section information for channel geometry and surrounding areas was taken from existing reports (References 40, 41, 42, and 43).

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 4.2), selected cross section locations are also shown on the Flood Insurance Rate Map (Exhibit 2).

For the approximate studies, floodplain limits were defined by normal-depth calculations in approximate, typical cross sections taken from USGS maps.

The hydraulic analyses for this study were based on unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

All elevations are referenced to the National Geodetic Vertical Datum of 1929 (NGVD). Elevation reference marks used in this study are shown on the maps; the descriptions of the marks are presented in Elevation Reference Marks (Exhibit 3).

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

The NFIP encourages State and local governments to adopt sound floodplain management programs. Therefore, each Flood Insurance Study provides 100-year flood elevations and delineations of the 100- and 500- year floodplain boundaries and 100-year floodway to assist communities in developing floodplain management measures.

4.1 Flood Boundaries

To provide a national standard without regional discrimination, the 1 percent annual chance (100-year) flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2 percent annual chance (500-year) flood is employed to indicate additional areas of flood risk in the community. For each stream studied by detailed methods, the 100- and 500-year floodplain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using topographic maps at scales of 1:6,000, 1:1,200, 1:2,400, and 1:24,000, with contour intervals of 2, 10, and 20 feet (References 34 and 44 through 58).

The 100- and 500-year floodplain boundaries are shown on the Flood Insurance Rate Map (Exhibit 2). On this map, the 100-year floodplain boundary corresponds to the boundary of the areas of special flood hazards (Zones A, AE, and AO), and the 500-year floodplain boundary corresponds to the boundary of areas of moderate flood hazards. In cases where the 100- and 500-year floodplain boundaries are close together, only the 100-year

floodplain boundary has been shown. Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

Approximate 100-year floodplain boundaries in some portions of the study area were taken directly from the Flood Insurance Rate Map for the Town of Deer Trail, Colorado (Reference 59).

For the streams studied by approximate methods, only the 100-year floodplain boundary is shown on the Flood Insurance Rate Map (Exhibit 2).

4.2 Floodways

Encroachment on floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard. For purposes of the NFIP, a floodway is used as a tool to assist local communities in this aspect of floodplain management. Under this concept, the area of the 100-year floodplain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment so that the 100-year flood can be carried without substantial increases in flood heights. Minimum Federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced. The floodways in this study are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway studies.

The floodways presented in this study were computed for certain stream segments on the basis of equal conveyance reduction from each side of the floodplain. Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. The results of the floodway computations are tabulated for selected cross sections (Table 2). The computed floodways are shown on the Flood Insurance Rate Map (Exhibit 2). In cases where the floodway and 100-year floodplain boundaries are either close together or collinear, only the floodway boundary is shown.

The area between the floodway and 100-year floodplain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the floodplain that could be completely obstructed without increasing the water-surface elevation of the 100-year flood by more than 1.0 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 8.

Table 2. Floodway Data

FLOODING SOURCE		FLOODWAY			BASE FLOOD ELEVATION			
Cross Section	Distance[1]	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet per Second)	Regulatory (Feet)	Without Floodway (Feet)	With Floodway (Feet)	Increase (Feet)
Bear Creek								
A	0	980	7,535	1.1	5,266.9	5,266.9	5,266.9	0.0
B	370	164	690	11.8	5,268.1	5,268.1	5,268.1	0.0
C	630	140	546	11.3	5,276.9	5,276.9	5,276.9	0.0
D	822	104	531	11.6	5,278.7	5,278.7	5,278.7	0.0
E	1,522	75	461	13.3	5,284.6	5,284.6	5,284.7	0.1
F	2,082	125	529	11.6	5,291.1	5,291.1	5,291.1	0.0
G	2,777	92	878	7.6	5,295.2	5,295.2	5,295.3	0.1
H	3,252	222	1,093	7.5	5,296.1	5,296.1	5,296.2	0.1
I	3,682	89	819	10.0	5,297.0	5,297.0	5,297.0	0.0
J	3,727	114	760	10.7	5,298.3	5,298.3	5,298.3	0.0
K	3,937	295	1,736	4.7	5,298.6	5,298.6	5,298.6	0.0
L	4,492	317	1,565	5.2	5,298.8	5,298.8	5,299.6	0.8
M	5,152	260	1,330	6.1	5,301.4	5,301.4	5,301.6	0.2
N	5,827	120	794	10.3	5,304.3	5,304.3	5,304.3	0.0
O	6,082	56	711	11.5	5,309.0	5,309.0	5,309.0	0.0
P	6,122	70	829	9.8	5,309.0	5,309.0	5,309.3	0.3
Q	6,361	200	1,865	4.4	5,310.9	5,310.9	5,311.0	0.1

[1]Feet Above Mouth

Table 2. Floodway Data

FLOODING SOURCE		FLOODWAY			BASE FLOOD ELEVATION			
Cross Section	Distance[1]	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet per Second)	Regulatory (Feet)	Without Floodway (Feet)	With Floodway (Feet)	Increase (Feet)
Big Dry Creek								
A	1,095	550	2,042	5.1	5,313.2	5,313.2	5,313.2	0.0
B	1,525	100	680	15.3	5,316.9	5,316.9	5,316.9	0.0
C	1,770	80	1,154	9.0	5,325.3	5,325.3	5,325.3	0.0
D	1,880	90	1,340	7.7	5,326.3	5,326.3	5,326.3	0.0
E	2,160	510	4,710	2.2	5,327.4	5,327.4	5,327.4	0.0
F	6,300	367	5,028	2.1	5,357.3	5,357.3	5,357.4	0.1
G	7,410	330	1,256	8.3	5,357.3	5,357.3	5,357.3	0.0
H	8,050	186	899	11.6	5,364.4	5,364.4	5,364.4	0.0
I	8,880	120	847	12.3	5,371.4	5,371.4	5,371.4	0.0
J	9,150	113	1,641	6.3	5,378.8	5,378.8	5,379.4	0.6
K	9,630	186	1,500	6.5	6,379.1	5,379.1	5,379.7	0.6
L	10,750	148	788	13.2	5,386.7	5,386.7	5,386.7	0.0
M	12,965	103	1,083	1.4	5,404.8	5,404.8	5,404.9	0.1
N	13,173	293	2,108	0.5	5,406.2	5,406.2	5,406.4	0.2
O	13,870	155	793	2.7	5,408.9	5,408.9	5,408.9	0.0
P	14,535	85	659	3.9	5,415.6	5,415.6	5,415.6	0.0
Q	14,600	177	1,020	10.2	5,418.4	5,418.4	5,418.4	0.0
R	15,050	102	995	10.5	5,420.6	5,420.6	5,420.7	0.1
S	15,600	78	634	16.4	5,423.5	5,423.5	5,423.5	0.0
T	16,800	270	1,358	7.7	5,430.2	5,430.2	5,430.7	0.5
U	17,910	206	974	10.7	5,436.1	5,436.1	5,436.3	0.2
V	18,820	800	1,798	5.8	5,445.4	5,445.4	5,445.4	0.0
W	18,900	820	1,616	6.4	5,445.6	5,445.6	5,445.6	0.0
X	19,120	710	645	16.1	5,448.2	5,448.2	5,448.2	0.0
Y	20,120	380	1,555	6.7	5,455.3	5,455.3	5,455.3	0.0
Z	20,420	490	1,469	7.1	5,459.1	5,459.1	5,459.1	0.0

[1]Feet Above Confluence With South Platte River

Table 2. Floodway Data

FLOODING SOURCE		FLOODWAY			BASE FLOOD ELEVATION			
Cross Section	Distance[1]	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet per Second)	Regulatory (Feet)	Without Floodway (Feet)	With Floodway (Feet)	Increase (Feet)
Big Dry Creek (Cont'd)								
AA	20,500	500	2,166	4.8	5,460.2	5,460.2	5,460.2	0.0
AB	20,680	370	2,131	4.9	5,460.3	5,460.3	5,460.3	0.0
AC	21,075	185	1,023	10.2	5,462.8	5,462.8	5,462.8	0.0
AD	21,930	294	1,366	7.6	5,469.1	5,469.1	5,469.1	0.0
AE	22,650	330	1,731	6.0	5,472.3	5,472.3	5,472.4	0.1
AF	23,240	220	1,029	10.1	5,480.8	5,480.8	5,480.8	0.0
AG	23,775	180	977	10.6	5,485.0	5,485.0	5,485.2	0.2
AH	24,635	255	2,059	5.0	5,492.5	5,492.5	5,492.5	0.0
AI	25,685	350	766	13.6	5,494.5	5,494.5	5,494.9	0.4
AJ	26,490	90	716	14.5	5,503.3	5,503.3	5,504.3	1.0
AK	27,190	482	1,610	6.5	5,513.4	5,513.4	5,513.4	0.0
AL	27,550	98	692	15.0	5,515.4	5,515.4	5,515.4	0.0
AM	28,000	360	2,239	4.6	5,521.1	5,521.1	5,521.1	0.0
AN	28,690	410	2,329	4.2	5,521.6	5,521.6	5,521.6	0.0
AO	29,200	490	2,039	4.8	5,522.7	5,522.7	5,522.7	0.0
AP	29,725	420	535	18.2	5,530.1	5,530.1	5,530.1	0.0
AQ	30,595	260	1,562	6.2	5,538.4	5,538.4	5,538.4	0.0
AR	30,965	520	4,277	2.3	5,540.0	5,540.0	5,540.0	0.0
AS	31,550	360	1,260	7.7	5,541.2	5,541.2	5,541.2	0.0
AT	32,200	190	1,014	9.6	5,548.8	5,548.8	5,548.8	0.0
AU	32,670	175	1,028	9.5	5,553.7	5,553.7	5,553.7	0.0
AV	33,090	140	907	10.8	5,559.1	5,559.1	5,559.1	0.0
AW	33,545	160	912	10.7	5,562.0	5,562.0	5,562.0	0.0
AX	34,500	190	1,112	8.8	5,570.9	5,570.9	5,570.9	0.0
AY	36,300	290	1,304	7.5	5,583.5	5,583.5	5,583.5	0.0
AZ	37,175	400	1,472	6.6	5,590.0	5,590.0	5,590.0	0.0

[1]Feet Above Confluence With South Platte River

Table 2. Floodway Data

FLOODING SOURCE		FLOODWAY			BASE FLOOD ELEVATION			
Cross Section	Distance[1]	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet per Second)	Regulatory (Feet)	Without Floodway (Feet)	With Floodway (Feet)	Increase (Feet)
Big Dry Creek (Cont'd)								
BA	37,820	190	991	9.8	5,594.0	5,594.0	5,594.0	0.0
BB	38,850	150	1,030	9.5	5,606.6	5,606.6	5,606.6	0.0
BC	39,940	325	1,726	5.6	5,612.4	5,612.4	5,612.4	0.0
BD	40,750	150	964	10.1	5,622.4	5,622.4	5,622.4	0.0
BE	42,235	155	960	8.4	5,635.3	5,635.3	5,635.3	0.0
BF	43,040	90	863	9.3	5,637.8	5,637.8	5,637.8	0.0
BG	44,490	135	791	10.2	5,655.1	5,655.1	5,655.1	0.0
BH	45,950	120	1,131	7.1	5,665.5	5,665.5	5,665.5	0.0
BI	46,625	220	779	10.3	5,673.5	5,673.5	5,673.5	0.0
BJ	46,800	390	1,400	5.8	5,678.7	5,678.7	5,678.7	0.0

[1]Feet Above Confluence With South Platte River

Table 2. Floodway Data

FLOODING SOURCE		FLOODWAY			BASE FLOOD ELEVATION			
Cross Section	Distance[1]	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet per Second)	Regulatory (Feet)	Without Floodway (Feet)	With Floodway (Feet)	Increase (Feet)
Blackmer Gulch								
A	530	166	610	4	5,407.8	5,407.8	5,408.3	0.5
B	1,080	161	846	1	5,410.5	5,410.5	5,411.5	1.0
C	1,930	38	117	9	5,418.8	5,418.8	5,419.7	0.9
D	3,010	30	150	7	5,429.6	5,429.6	5,430.5	0.9
E	3,153	63	134	8	5,437.0	5,437.0	5,437.6	0.6
F	4,293	34	111	10	5,446.0	5,446.0	5,446.2	0.2
G	4,374	50	172	6	5,458.5	5,458.5	5,458.9	0.4
H	5,714	32	108	10	5,460.0	5,460.0	5,460.2	0.2
I	6,314	28	68	8	5,464.0	5,464.0	5,464.9	0.9
J	6,720	30	58	9	5,489.0	5,489.0	5,489.9	0.9
K	8,034	50	86	6	5,502.8	5,502.8	5,503.4	0.6
L	8,835	33	66	8	5,532.7	5,532.7	5,533.7	1.0
M	9,850	57	89	6	5,550.5	5,550.5	5,551.2	0.7
N	11,045	22	58	9	5,585.2	5,585.2	5,585.5	0.3

[1]Feet Above Confluence With Greenwood Gulch

Table 2. Floodway Data

FLOODING SOURCE		FLOODWAY			BASE FLOOD ELEVATION			
Cross Section	Distance[1]	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet per Second)	Regulatory (Feet)	Without Floodway (Feet)	With Floodway (Feet)	Increase (Feet)
Box Elder Creek								
A	290,100	520	2,229	11.7	5,547.9	5,547.9	5,547.9	0.0
B	291,500	780	5,369	4.8	5,553.6	5,553.6	5,554.6	1.0
C	293,040	650	2,447	11.4	5,560.0	5,560.0	5,561.0	1.0
D	294,060	785	4,443	5.8	5,566.6	5,566.6	5,567.5	0.9
E	295,190	700	2,422	10.7	5,571.9	5,571.9	5,572.1	0.2
F	296,665	600	3,155	8.2	5,581.4	5,581.4	5,582.3	0.9
G	297,365	530	2,427	10.6	5,584.9	5,584.9	5,585.9	1.0
H	298,065	1,230	4,432	5.8	5,587.9	5,587.9	5,588.9	1.0
I	299,585	1,470	2,212	9.5	5,594.6	5,594.6	5,594.7	0.1
J	301,235	1,210	4,956	5.2	5,604.0	5,604.0	5,604.6	0.6
K	302,635	580	3,630	7.1	5,608.8	5,608.8	5,609.1	0.3
L	303,435	930	3,938	6.5	5,612.7	5,612.7	5,613.7	1.0
M	304,435	1,260	5,343	4.8	5,618.2	5,618.2	5,619.0	0.8
N	305,285	540	2,108	12.2	5,623.5	5,623.5	5,623.7	0.2
O	306,335	1,080	5,052	5.1	5,629.0	5,629.0	5,630.0	1.0
P	307,345	760	2,966	8.7	5,633.3	5,633.3	5,633.5	0.2
Q	308,695	930	5,990	4.3	5,639.1	5,639.1	5,640.0	0.9
R	309,695	700	3,119	8.3	5,644.0	5,644.0	5,645.0	1.0
S	310,395	1,310	4,521	5.7	5,648.9	5,648.9	5,649.9	1.0

[1]Feet Above Mouth

Table 2. Floodway Data

FLOODING SOURCE		FLOODWAY			BASE FLOOD ELEVATION			
Cross Section	Distance[1]	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet per Second)	Regulatory (Feet)	Without Floodway (Feet)	With Floodway (Feet)	Increase (Feet)
Cherry Creek								
A	78,035	677/400[2]	5,452	9.4	5,620.0	5,620.0	5,620.7	0.7
B	78,855	717	5,313	9.5	5,623.7	5,623.7	5,624.3	0.6
C	79,135	571	4,853	10.4	5,625.4	5,625.4	5,626.1	0.7
D	79,945	1,344	10,546	4.8	5,629.5	5,629.5	5,630.5	1.0
E	80,540	1,053	8,462	5.9	5,630.8	5,630.8	5,631.6	0.8
F	81,475	1,362	7,945	6.3	5,633.8	5,633.8	5,634.6	0.8
G	81,930	1,087	5,481	9.2	5,635.8	5,635.8	5,636.5	0.7
H	82,485	921	7,150	7.0	5,639.7	5,639.7	5,640.5	0.8
I	83,025	1,831	14,806	3.3	5,645.9	5,645.9	5,646.6	0.7
J	83,295	1,795	12,488	4.0	5,646.1	5,646.1	5,646.8	0.7
K	83,755	1,919	8,953	5.5	5,646.4	5,646.4	5,647.1	0.7
L	85,175	2,730	13,432	3.6	5,649.1	5,649.1	5,649.8	0.7
M	86,145	2,178	9,670	5.0	5,650.1	5,650.1	5,650.9	0.8
N	86,615	2,010	9,465	5.1	5,651.2	5,651.2	5,652.2	1.0
O	87,465	1,390	6,987	6.9	5,654.8	5,654.8	5,655.6	0.8
P	88,255	1,220	6,248	7.6	5,659.1	5,659.1	5,659.8	0.7
Q	89,175	780	6,183	7.7	5,664.6	5,664.5	5,665.5	0.9
R	89,605	827	7,342	6.4	5,666.7	5,666.7	5,667.5	0.8
S	90,185	990	7,635	6.2	5,668.9	5,668.9	5,669.1	0.2
T	91,145	770	6,605	7.1	5,671.6	5,671.6	5,671.6	0.0
U	91,885	760	4,475	10.4	5,676.5	5,676.5	5,676.5	0.0
V	92,313	730	4,703	9.8	5,679.0	5,679.0	5,679.4	0.4
W	93,555	1,000	6,576	7.0	5,685.4	5,685.4	5,686.1	0.7
X	94,045	943	5,630	8.1	5,687.0	5,687.0	5,687.6	0.6
Y	94,625	1,020	6,836	6.7	5,690.8	5,690.8	5,691.4	0.6
Z	96,225	630	4,422	10.2	5,695.4	5,695.4	5,696.2	0.8

[1]In Feet Above Confluence With South Platte River
[2]Width/Width Within City Limits

Table 2. Floodway Data

FLOODING SOURCE		FLOODWAY			BASE FLOOD ELEVATION			
Cross Section	Distance[1]	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet per Second)	Regulatory (Feet)	Without Floodway (Feet)	With Floodway (Feet)	Increase (Feet)
Cherry Creek (Cont'd)								
AA	96,825	860	7,307	6.1	5,699.4	5,699.4	5,700.0	0.6
AB	97,375	932	6,020	7.4	5,701.4	5,701.4	5,701.9	0.5
AC	97,925	805	6,938	6.4	5,703.2	5,703.2	5,704.1	0.9
AD	99,525	950	7,361	6.0	5,707.6	5,707.6	5,708.4	0.8
AE	100,325	769	6,775	6.5	5,709.3	5,709.3	5,710.1	0.8

[1]In Feet Above Confluence With South Platte River

Table 2. Floodway Data

FLOODING SOURCE		FLOODWAY			BASE FLOOD ELEVATION			
Cross Section	Distance[1]	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet per Second)	Regulatory (Feet)	Without Floodway (Feet)	With Floodway (Feet)	Increase (Feet)
Cherry Creek Spillway Drain								
A	1,950	270	363	7.2	5,531.1	5,531.1	5,531.1	0.0
B	2,730	164	1,030	2.4	5,558.7	5,558.7	5,558.8	0.1
C	3,380	175	322	7.1	5,572.5	5,572.5	5,572.5	0.0
D	3,630	68	180	9.3	5,588.9	5,588.9	5,588.9	0.0
E	5,232	149	341	4.6	5,612.1	5,612.1	5,612.1	0.0

[1]Feet Above Confluence With West Toll Gate Creek

Table 2. Floodway Data

FLOODING SOURCE		FLOODWAY			BASE FLOOD ELEVATION			
Cross Section	Distance[1]	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet per Second)	Regulatory (Feet)	Without Floodway (Feet)	With Floodway (Feet)	Increase (Feet)
Coal Creek								
A	77,150	1,900	2,746	7.1	5,497.6	5,497.6	5,497.6	0.0
B	78,270	3,260	1,907	10.2	5,502.5	5,502.5	5,502.5	0.0
C	80,320	3,160	6,460	3.0	5,511.2	5,511.2	5,512.2	1.0
D	83,150	470	1,900	10.3	5,523.9	5,523.9	5,524.4	0.5
E	84,155	350	2,220	8.8	5,529.4	5,529.4	5,530.4	0.0
F	85,900	600	3,177	6.1	5,536.2	5,536.2	5,536.9	0.7
G	86,005	600	2,747	7.1	5,536.2	5,536.2	5,536.9	0.7
H	87,200	280	1,456	13.4	5,543.5	5,543.5	5,543.5	0.0
I	88,195	400	2,880	6.8	5,550.3	5,550.3	5,550.6	0.3
J	89,990	500	3,100	6.3	5,556.9	5,556.9	5,557.9	1.0
K	91,790	610	2,680	7.3	5,564.5	5,564.5	5,565.4	0.9
L	93,425	600	3,200	6.1	5,572.2	5,572.2	5,573.2	1.0
M	95,125	400	2,540	7.4	5,580.5	5,580.5	5,581.5	1.0
N	96,380	585	2,980	6.3	5,584.6	5,584.6	5,585.3	0.7
O	97,495	270	1,113	16.9	5,590.5	5,590.5	5,590.8	0.3
P	98,380	450	2,640	6.9	5,596.3	5,596.3	5,597.3	1.0
Q	100,095	410	3,200	5.7	5,599.5	5,599.5	5,600.3	0.8
R	101,900	400	1,800	10.1	5,609.9	5,609.9	5,610.6	0.7
S	102,550	440	3,300	5.5	5,614.6	5,614.6	5,615.6	1.0
T	102,650	600	2,573	7.0	5,620.2	5,620.2	5,621.2	1.0
U	103,480	685	5,955	3.0	5,621.3	5,621.3	5,622.1	0.8
V	104,100	800	1,136	15.9	5,622.8	5,622.8	5,622.8	0.0
W	105,150	900	3,482	5.2	5,627.0	5,627.0	5,627.0	0.0
X	106,175	570	1,800	10.1	5,631.0	5,631.0	5,631.1	0.1
Y	106,950	560	3,236	5.3	5,636.5	5,636.5	5,637.2	0.7
Z	107,750	780	3,154	5.4	5,639.5	5,639.5	5,640.1	0.6
AA	108,650	590	2,454	7.0	5,643.3	5,643.3	5,643.9	0.6
AB	109,900	440	1,973	9.1	5,649.1	5,649.1	5,649.6	0.5

[1]Feet Above Mouth of Sand Creek

Table 2. Floodway Data

FLOODING SOURCE		FLOODWAY			BASE FLOOD ELEVATION			
Cross Section	Distance[1]	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet per Second)	Regulatory (Feet)	Without Floodway (Feet)	With Floodway (Feet)	Increase (Feet)
Comanche Creek								
A	147,210	1,900	5,209	3.9	5,369.3	5,369.3	5,369.3	0.0
B	147,830	1,680	5,276	3.8	5,370.6	5,370.6	5,370.6	0.0
C	147,880	1,300	3,049	6.6	5,372.0	5,372.0	5,372.0	0.0
D	148,830	1,736	2,015	9.2	5,374.0	5,374.0	5,374.0	0.0
E	148,980	1,680	1,353	13.7	5,374.1	5,374.1	5,374.1	0.0
F	149,580	2,915	7,514	2.5	5,379.5	5,379.5	5,379.5	0.0
G	150,450	1,220	2,280	8.1	5,382.3	5,382.3	5,382.3	0.0
H	151,650	1,440	5,208	3.6	5,388.5	5,388.5	5,388.5	0.0
I	152,520	1,270	2,340	7.9	5,394.8	5,394.8	5,394.8	0.0

[1]Feet Above Mouth

Table 2. Floodway Data

FLOODING SOURCE		FLOODWAY			BASE FLOOD ELEVATION			
Cross Section	Distance[1]	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet per Second)	Regulatory (Feet)	Without Floodway (Feet)	With Floodway (Feet)	Increase (Feet)
Little Comanche Creek								
A	2,070	1,900	5,209	3.9	5,369.3	5,369.3	5,369.3	0.0
B	2,700	1,680	5,276	3.8	5,370.6	5,370.6	5,370.6	0.0
C	2,770	1,300	3,049	6.6	5,372.0	5,372.0	5,372.0	0.0
D	3,900	1,736	2,015	9.2	5,374.0	5,374.0	5,374.0	0.0
E	4,000	1,680	1,353	13.7	5,374.1	5,374.1	5,374.1	0.0
F	4,770	2,915	7,514	2.5	5,379.5	5,379.5	5,379.5	0.0
G	6,000	230	2,280	8.1	5,382.3	5,382.3	5,382.3	0.0
H	6,450	570	5,208	3.6	5,388.5	5,388.5	5,388.5	0.0
I	7,500	170	1,360	5.4	5,389.6	5,389.6	5,389.6	0.0

[1]Feet Above Confluence With Comanche Creek

Table 2. Floodway Data

FLOODING SOURCE		FLOODWAY			BASE FLOOD ELEVATION			
Cross Section	Distance[1]	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet per Second)	Regulatory (Feet)	Without Floodway (Feet)	With Floodway (Feet)	Increase (Feet)
Dutch Creek								
A	1,880	165	1,114	4.6	5,345.0	5,345.0	5,345.8	0.8
B	2,670	161	613	8.5	5,350.3	5,350.3	5,350.6	0.3
C	3,000	209	607	8.3	5,360.0	5,360.0	5,360.0	0.0
D	3,570	161	1,456	3.5	5,361.0	5,361.0	5,361.0	0.0
E	4,060	174	1,071	4.8	5,361.6	5,361.6	5,361.6	0.0
F	4,750	231	1,407	3.7	5,373.3	5,373.3	5,373.9	0.6

[1]Feet Above Corporate Limits

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Table 2. Floodway Data

FLOODING SOURCE		FLOODWAY			BASE FLOOD ELEVATION			
Cross Section	Distance[1]	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet per Second)	Regulatory (Feet)	Without Floodway (Feet)	With Floodway (Feet)	Increase (Feet)
Granby Ditch								
A	315	190	228	5.8	5,346.5	5,646.5	5,646.5	0.0
B	500	115	392	3.7	5,347.6	5,347.6	5,347.9	0.3
C	807	49	177	8.2	5,348.3	5,348.3	5,348.3	0.0
D	1,328	90	422	3.4	5,350.0	5,350.0	5,350.5	0.5
E	1,680	100	415	3.5	5,350.3	5,350.3	5,350.8	0.5
F	1,782	175	221	5.7	5,350.8	5,350.8	5,351.2	0.4
G	2,370	232	384	3.5	5,355.1	5,355.1	5,356.1	1.0
H	3,170	270	410	3.3	5,359.2	5,359.2	5,359.7	0.5
I	3,878	160	308	4.5	5,364.8	5,364.8	5,365.4	0.6
J	4,570	265	232	6.0	5,371.2	5,371.2	5,371.2	0.0
K	5,240	560	330	4.1	5,380.1	5,380.1	5,380.2	0.1
M	5,884	125	189	7.2	5,387.6	5,387.6	5,387.6	0.0
N	7,012	168	220	6.2	5,394.5	5,394.5	5,394.5	0.0
O	7,743	42	170	8.0	5,399.8	5,399.8	5,399.8	0.0
P	7,694	37	180	7.2	5,401.2	5,401.2	5,401.2	0.0
Q	7,775	109	253	4.3	5,402.2	5,402.2	5,402.2	0.0
R	8,354	62	131	8.3	5,406.2	5,406.2	5,406.2	0.0
S	8,433	135	441	2.5	5,407.4	5,407.4	5,407.4	0.0
T	8,512	89	315	3.5	5,407.4	5,407.4	5,407.4	0.0
U	8,798	83	154	6.8	5,407.6	5,407.6	5,407.6	0.0
V	8,958	145	177	6.5	5,410.2	5,410.2	5,410.2	0.0
W	9,246	133	175	6.6	5,415.0	5,415.0	5,415.0	0.0
X	9,840	165	214	5.4	5,421.1	5,421.1	5,421.1	0.0
Y	10,650	90	406	2.7	5,426.8	5,426.8	5,426.8	0.0
Z	11,150	200	366	2.9	5,429.2	5,429.2	5,429.3	0.1
AA	11,193	146	173	6.6	5,429.2	5,429.2	5,429.2	0.0
AB	11,420	140	363	3.2	5,430.7	5,430.7	5,430.7	0.0

[1]Feet Above Confluence With Sable Ditch

Table 2. Floodway Data

FLOODING SOURCE		FLOODWAY			BASE FLOOD ELEVATION			
Cross Section	Distance[1]	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet per Second)	Regulatory (Feet)	Without Floodway (Feet)	With Floodway (Feet)	Increase (Feet)
Granby Ditch (Cont'd)								
AC	11,788	490	304	3.8	5,431.8	5,431.8	5,431.8	0.0
AD	12,022	790	2,802	0.4	5,445.1	5,445.1	5,445.1	0.0
AE	12,167	569	2,201	0.5	5,445.1	5,445.1	5,445.1	0.0
AF	12,540	260	996	1.1	5,445.1	5,445.1	5,445.1	0.0
AG	12,996	140	402	2.7	5,445.2	5,445.2	5,445.2	0.0
AH	13,152	120	512	2.1	5,449.2	5,449.2	5,449.2	0.0

Table 2. Floodway Data

FLOODING SOURCE		FLOODWAY			BASE FLOOD ELEVATION			
Cross Section	Distance[1]	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet per Second)	Regulatory (Feet)	Without Floodway (Feet)	With Floodway (Feet)	Increase (Feet)
Goldsmith Gulch								
A	70	60	211	10.7	5,589.5	5,589.5	5,589.6	0.1
B	950	110	457	4.6	5,595.2	5,595.2	5,595.6	0.4
C	2,125	90	246	8.5	5,600.7	5,600.7	5,600.7	0.0
D	2,210	120	269	7.8	5,602.0	5,602.0	5,602.1	0.1
E	2,925	370	373	4.7	5,610.6	5,610.6	5,610.6	0.0
F	3,000	500	2,399	0.7	5,615.8	5,615.8	5,615.8	0.0
G	3,610	117	345	5.1	5,615.8	5,615.8	5,615.8	0.0
H	3,920	150	250	7.0	5,618.6	5,618.6	5,618.6	0.0
I	4,015	180	1,059	1.6	5,625.0	5,625.0	5,625.0	0.0
J	4,770	240	227	6.7	5,627.2	5,627.2	5,627.3	0.0
K	5,050	240	1,826	0.9	5,636.2	5,636.2	5,636.2	0.0
L	5,670	144	340	1.6	5,636.2	5,636.2	5,636.2	0.0
M	6,450	65	88	6.1	5,643.0	5,643.0	5,643.0	0.0
N	7,085	170	107	5.0	5,656.6	5,656.0	5,656.0	0.0

[1]Feet Above East Bellview Avenue

Table 2. Floodway Data

FLOODING SOURCE		FLOODWAY			BASE FLOOD ELEVATION			
Cross Section	Distance[1]	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet per Second)	Regulatory (Feet)	Without Floodway (Feet)	With Floodway (Feet)	Increase (Feet)
West Tributary to Goldsmith Gulch								
A	420	90	168	7.4	5,636.5	5,636.5	5,636.5	0.0
B	810	135	240	5.2	5,642.3	5,642.3	5,642.3	0.0
C	1,250	190	234	5.3	5,646.9	5,646.9	5,646.9	0.0

[1]Feet Above Confluence With Goldsmith Gulch

Table 2. Floodway Data

FLOODING SOURCE		FLOODWAY			BASE FLOOD ELEVATION			
Cross Section	Distance	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet per Second)	Regulatory (Feet)	Without Floodway (Feet)	With Floodway (Feet)	Increase (Feet)
Greenwood Gulch								
A	1,100[1]	181	850	4	5,346.5	5,346.5	5,347.5	1.0
B	1,400[1]	100	560	6	5,347.2	5,347.2	5,348.2	1.0
C	3,350[1]	70	350	10	5,355.4	5,355.4	5,356.4	1.0
D	5,950[1]	237	573	6	5,372.4	5,372.4	5,373.4	1.0
E	7,250[1]	279	910	4	5,377.7	5,377.7	5,378.7	1.0
F	7,900[1]	70	393	9	5,382.6	5,382.6	5,383.6	1.0
G	8,032[1]	225	1,080	3	5,383.7	5,383.7	5,384.7	1.0
H	8,225[1]	133	510	7	5,384.3	5,384.3	5,385.3	1.0
I	11,575[1]	235	802	4	5,402.0	5,402.0	5,403.0	1.0
J	14,120[1]	180	456	4	5,417.6	5,417.6	5,418.6	1.0
K	15,295[1]	65	445	4	5,428.8	5,428.8	5,429.7	0.9
L	18,695[1]	170	450	4	5,450.3	5,450.3	5,451.3	1.0
M	25[2]	296	463	5.9	5,451.3	5,451.3	5,451.8	0.5
N	600[2]	301	643	4.3	5,458.4	5,458.4	5,458.9	0.5
O	870[2]	190	494	5.6	5,459.4	5,459.4	5,459.9	0.5
P	1,415[2]	69	429	6.4	5,459.4	5,459.4	5,459.9	0.5
Q	1,595[2]	262	1,393	2.0	5,466.6	5,466.6	5,466.7	0.1
R	2,050[2]	255	796	3.4	5,469.1	5,469.1	5,469.1	0.0
S	2,155[2]	370	761	3.6	5,475.2	5,475.2	5,475.2	0.0
T	2,610[2]	158	353	7.8	5,477.1	5,477.1	5,477.1	0.0
U	3,330[2]	462	1,017	2.7	5,483.5	5,483.5	5,483.7	0.2
V	4,260[2]	950	933	2.9	5,487.7	5,487.7	5,487.8	0.1
W	4,420[2]	825	1,790	1.5	5,493.0	5,493.0	5,493.0	0.0
X	5,365[2]	339	327	5.4	5,498.4	5,498.4	5,498.5	0.1
Y	7,370[2]	170	476	3.7	5,513.4	5,513.4	5,513.7	0.3
Z	7,715[2]	320	241	7.3	5,517.3	5,517.3	5,517.6	0.3

[1]Feet Above Confluence With Little Dry Creek

[2]Feet Above Corporate Limits of Greenwood Village

Table 2. Floodway Data

FLOODING SOURCE		FLOODWAY			BASE FLOOD ELEVATION			
Cross Section	Distance[1]	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet per Second)	Regulatory (Feet)	Without Floodway (Feet)	With Floodway (Feet)	Increase (Feet)
Greenwood Gulch (Cont'd)								
AA	7,770	334	883	2.0	5,521.9	5,521.9	5,522.2	0.3
AB	7,855	101	411	4.1	5,521.9	5,521.9	5,522.2	0.3
AC	8,470	54	181	9.3	5,526.6	5,526.6	5,526.6	0.0
AD	9,570	84	301	5.6	5,537.8	5,537.8	5,538.2	0.4
AE	9,680	27	176	9.5	5,538.7	5,538.7	5,539.0	0.3

[1]Feet Above Corporate Limits of Greenwood Village

Table 2. Floodway Data

FLOODING SOURCE		FLOODWAY			BASE FLOOD ELEVATION			
Cross Section Little Creek	Distance[1]	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet per Second)	Regulatory (Feet)	Without Floodway (Feet)	With Floodway (Feet)	Increase (Feet)
A	3,380	535	5,200	0.4	5,366.3	5,366.3	5,366.3	0.0
B	3,950	110	278	8.1	5,366.4	5,366.4	5,366.4	0.0
C	4,005	265	348	6.5	5,371.1	5,371.1	5,371.1	0.0
D	4,530	270	820	2.8	5,372.7	5,372.7	5,372.7	0.0
E	5,045	200	349	6.5	5,378.0	5,378.0	5,378.0	0.0
F	5,650	161	441	5.1	5,386.2	5,386.2	5,386.2	0.0
G	6,315	85	357	6.3	5,389.6	5,389.6	5,389.6	0.0
H	6,650	158	393	5.7	5,392.2	5,392.2	5,392.2	0.0
I	7,150	155	453	5.0	5,395.5	5,395.5	5,395.5	0.0
J	7,800	130	360	6.3	5,403.7	5,403.7	5,403.7	0.0
K	7,885	230	490	5.6	5,405.0	5,405.0	5,405.0	0.0
L	8,410	135	352	6.4	5,407.0	5,407.0	5,407.0	0.0
M	8,535	225	628	3.6	5,409.2	5,409.2	5,409.2	0.0
N	9,085	103	260	8.6	5,412.8	5,412.8	5,412.8	0.0
O	9,530	170	627	3.6	5,416.7	5,416.7	5,416.7	0.0
P	9,970	230	339	5.2	5,422.3	5,422.3	5,422.3	0.0
Q	10,085	330	1,138	1.6	5,423.4	5,423.4	5,423.4	0.0
R	10,590	104	206	8.5	5,423.5	5,423.5	5,423.5	0.0
S	11,270	112	245	7.2	5,434.2	5,434.2	5,434.2	0.0
T	11,610	343	487	3.6	5,438.5	5,438.5	5,438.5	0.0
U	11,685	260	508	3.5	5,439.2	5,439.2	5,439.2	0.0
V	12,050	110	329	5.4	5,443.0	5,443.0	5,443.0	0.0
W	12,380	135	402	4.4	5,447.1	5,447.1	5,447.1	0.0
X	12,710	130	320	5.5	5,450.0	5,450.0	5,450.0	0.0
Y	13,270	145	287	6.2	5,459.3	5,459.3	5,459.3	0.0
Z	13,340	151	252	7.3	5,462.6	5,462.6	5,462.6	0.0
AA	13,340	215	285	6.2	5,473.1	5,473.1	5,473.1	0.0
AB	14,515	110	378	2.6	5,477.0	5,477.0	5,477.0	0.0

[1]Feet Above Confluence With South Platte River

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Table 2. Floodway Data

FLOODING SOURCE		FLOODWAY			BASE FLOOD ELEVATION			
Cross Section	Distance[1]	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet per Second)	Regulatory (Feet)	Without Floodway (Feet)	With Floodway (Feet)	Increase (Feet)
Little Dry Creek								
A	1,550	570	850	8.0	5,340.7	5,340.7	5,340.7	0.0
B	1,700	190	1,499	2.0	5,341.9	5,341.9	5,342.9	1.0
C	2,750	85	615	5.0	5,345.9	5,345.9	5,346.9	1.0
D	3,030	90	692	5.0	5,348.4	5,348.4	5,349.4	1.0
E	3,550	100	838	4.0	5,349.4	5,349.4	5,350.3	0.9
F	4,300	70	371	9.0	5,351.0	5,351.0	5,352.0	1.0
G	6,750	182	627	6.0	5,362.1	5,362.1	5,362.2	0.1
H	7,150	40	366	9.0	5,363.0	5,363.0	5,364.0	1.0
I	7,290	130	700	5.0	5,366.1	5,366.1	5,367.1	1.0
J	7,880	10	625	6.0	5,368.0	5,368.0	5,368.9	0.9
K	9,240	180	644	5.0	5,375.6	5,375.6	5,376.5	0.9
L	10,110	134	788	4.0	5,379.1	5,379.1	5,379.7	0.6
M	13,660	80	480	7.0	5,396.6	5,396.6	5,397.6	1.0
N	14,330	245	1,067	3.0	5,400.5	5,400.5	5,401.4	0.9
O	16,130	70	335	10.7	5,411.0	5,411.0	5,411.0	0.0
P	16,495	164	906	4.0	5,411.5	5,411.5	5,411.6	0.1
Q	16,775	57	282	12.8	5,411.5	5,411.5	5,411.5	0.0
R	16,930	79	371	9.7	5,417.9	5,417.9	5,417.9	0.0
S	17,430	185	823	4.4	5,418.8	5,418.8	5,418.8	0.0
T	18,815	130	473	7.6	5,423.0	5,423.0	5,423.2	0.2
U	20,085	159	597	6.0	5,431.2	5,431.2	5,431.2	0.0
V	20,845	122	508	7.1	5,434.0	5,434.0	5,434.0	0.0
W	22,810	59	281	11.0	5,446.6	5,446.6	5,466.6	0.0
X	24,280	84	471	6.6	5,455.3	5,455.3	5,455.3	0.0
Y	24,390	81	768	4.0	5,455.9	5,455.9	5,455.9	0.0
Z	24,440	48	527	5.9	5,457.6	5,457.6	5,457.6	0.0

[1]Feet Above Confluence With South Platte River

Table 2. Floodway Data

FLOODING SOURCE		FLOODWAY			BASE FLOOD ELEVATION			
Cross Section	Distance[1]	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet per Second)	Regulatory (Feet)	Without Floodway (Feet)	With Floodway (Feet)	Increase (Feet)
Little Dry Creek (Cont'd)								
AA	24,890	67	270	11.5	5,459.1	5,459.1	5,459.1	0.0
AB	25,575	115	444	7.4	5,462.7	5,462.7	5,462.7	0.0
AC	26,400	90	400	8.7	5,468.1	5,468.1	5,468.1	0.0
AD	27,870	65	457	7.7	5,474.8	5,474.8	5,474.8	0.0
AE	27,935	75	418	8.4	5,481.4	5,481.4	5,481.4	0.0
AF	28,000	140	415	7.7	5,483.0	5,483.0	5,483.0	0.0
AG	29,960	90	353	9.1	5,500.0	5,500.0	5,500.0	0.0
AH	31,100	60	385	8.3	5,507.9	5,507.9	5,507.9	0.0
AI	32,310	340	776	4.1	5,518.0	5,518.0	5,518.0	0.0
AJ	35,250	510	136	16.4	5,540.2	5,540.2	5,540.2	0.0
AK	38,540	110	166	13.4	5,569.2	5,569.2	5,569.2	0.0
AL	38,900	35	304	7.3	5,569.2	5,569.2	5,569.2	0.0
AM	39,100	60	217	10.3	5,570.4	5,570.4	5,570.4	0.0
AN	39,400	75	297	7.5	5,581.1	5,581.1	5,581.1	0.0
AO	39,630	250	161	13.8	5,585.7	5,585.7	5,585.7	0.0
AP	39,850	285	1,470	1.5	5,592.2	5,595.2	5,595,2	0.0
AQ	40,400	130	242	7.7	5,592.3	5,592.3	5,592.3	0.0
AR	41,560	75	168	11.1	5,604.1	5,604.1	5,604.1	0.0
AS	42,076	80	149	12.5	5,609.4	5,609.4	5,609.4	0.0
AT	42,140	80	105	17.8	5,611.7	5,611.8	5,611.8	0.0
AU	42,190	95	167	6.9	5,616.5	5,616.5	5,616.5	0.0
AV	42,710	70	115	10.1	5,618.9	5,618.9	5,618.9	0.0
AW	43,780	40	119	9.7	5,629.1	5,629.1	5,629.1	0.0
AX	42,690	95	167	6.9	5,616.5	5,616.5	5,616.5	0.0
AY	43,210	70	115	10.1	5,618.9	5,618.9	5,618.9	0.0
AZ	44,280	40	119	9.7	5,629.1	5,629.1	5,629.1	0.0

[1]Feet Above Confluence With South Platte River

Table 2. Floodway Data

FLOODING SOURCE		FLOODWAY			BASE FLOOD ELEVATION			
Cross Section	Distance[1]	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet per Second)	Regulatory (Feet)	Without Floodway (Feet)	With Floodway (Feet)	Increase (Feet)
Little Dry Creek (Cont'd)								
AX	44,053	60	223	5.2	5,635.7	5,635.7	5,635.7	0.0
AY	45,070	80	109	10.6	5,654.4	5,654.4	5,654.4	0.0
AZ	45,540	160	104	10.6	5,666.3	5,666.3	5,666.3	0.0
BA	45,660	110	457	2.5	5,674.6	5,674.6	5,674.6	0.0
BB	46,150	50	112	10.3	5,677.6	5,677.6	5,677.6	0.0
BC	47,230	70	113	6.9	5,696.8	5,696.8	5,696.8	0.0
BD	47,890	60	87	8.9	5,718.0	5,718.0	5,718.0	0.0
BE	47,930	130	1,089	0.7	5,728.8	5,728.8	5,728.8	0.0
BF	48,490	65	95	8.2	5,728.9	5,728.9	5,728.9	0.0
BG	48,700	400	2,237	0.3	5,746.9	5,746.9	5,746.9	0.0
BH	48,950	140	1,287	0.6	5,746.9	5,746.9	5,746.9	0.0
BI	49,090	160	861	0.9	5,752.7	5,752.7	5,752.7	0.0
BJ	49,350	65	63	12.3	5,757.7	5,757.7	5,757.7	0.0

[1]Feet Above Confluence With South Platte River

Table 2. Floodway Data

FLOODING SOURCE		FLOODWAY			BASE FLOOD ELEVATION			
Cross Section	Distance[1]	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet per Second)	Regulatory (Feet)	Without Floodway (Feet)	With Floodway (Feet)	Increase (Feet)
Murphy Creek								
A	3,290	1,000	755	5.6	5,511.9	5,511.9	5,512.1	0.2
B	3,990	770	1,248	3.4	5,514.8	5,514.8	5,515.0	0.2
C	4,440	600	730	5.8	5,516.8	5,516.8	5,516.8	0.0
D	4,940	420	1,101	3.9	5,520.3	5,520.3	5,520.3	0.0
E	5,090	350	702	6.0	5,520.6	5,520.6	5,520.6	0.0
F	5,990	280	670	6.0	5,525.5	5,525.5	5,525.5	0.0
G	6,940	260	605	6.6	5,530.1	5,530.1	5,530.1	0.0
H	7,840	300	786	5.1	5,535.6	5,535.6	5,535.7	0.1
I	8,840	340	909	4.4	5,539.9	5,539.9	5,540.0	0.1
J	9,340	450	736	5.1	5,545.4	5,545.4	5,545.4	0.0
K	9,890	300	576	6.5	5,549.3	5,549.3	5,549.4	0.1
L	11,040	750	759	4.9	5,557.2	5,557.2	5,557.5	0.3
M	12,040	540	514	6.9	5,652.9	5,652.9	5,653.4	0.5
N	12,690	600	565	6.3	5,566.6	5,566.0	5,566.6	0.6
O	13,240	570	316	11.2	5,570.5	5,570.5	5,750.5	0.0
P	13,310	570	681	5.2	5,573.1	5,573.1	5,573.1	0.0
Q	14,160	160	281	12.1	5,575.7	5,575.7	5,575.7	0.0
R	14,910	140	487	7.0	5,581.6	5,581.6	5,581.6	0.0
S	16,060	120	356	9.6	5,585.4	5,585.4	5,585.4	0.0
T	17,010	150	435	7.4	5,591.0	5,591.0	5,591.0	0.0
U	17,360	130	548	5.8	5,592.3	5,592.3	5,592.3	0.0
V	18,010	190	302	10.6	5,595.4	5,595.4	5,595.5	0.1
W	18,710	610	1,203	2.7	5,598.3	5,598.3	5,598.9	0.6
X	19,660	100	285	11.2	5,600.7	5,600.7	5,600.8	0.1
Y	20,160	160	456	7.0	5,604.2	5,604.2	5,604.2	0.0
Z	20,910	60[2]	372	8.2	5,607.4	5,607.4	5,607.5	0.1

[1]Feet Above Confluence With Coal Creek

[2]Floodway Not Shown Due To Scale Limitations

Table 2. Floodway Data

FLOODING SOURCE		FLOODWAY			BASE FLOOD ELEVATION			
Cross Section	Distance[1]	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet per Second)	Regulatory (Feet)	Without Floodway (Feet)	With Floodway (Feet)	Increase (Feet)
Murphy Creek (Cont'd)								
AA	21,020	120	1,029	3.0	5,616.5	5,616.5	5,616.5	0.0
AB	22,900	150	443	6.9	5,623.4	5,623.4	5,623.4	0.0
AC	23,450	80[2]	529	5.8	5,627.0	5,627.0	5,627.1	0.1
AD	25,000	360	453	6.4	5,635.1	5,635.1	5,635.1	0.0
AE	26,250	150	368	7.9	5,642.6	5,642.6	5,642.8	0.2
AF	26,950	240	474	6.1	5,646.2	5,646.2	5,646.8	0.6
AG	27,850	100	421	6.9	5,650.8	5,650.8	5,650.8	0.0
AH	28,350	130	376	7.3	5,652.8	5,652.8	5,652.8	0.0
AI	29,650	180	342	7.9	5,658.0	5,658.0	5,658.1	0.1
AJ	30,350	80[2]	420	6.4	5,662.5	5,662.5	5,662.8	0.3

[1]Feet Above Confluence With Coal Creek

[2]Floodway Not Shown Due To Scale Limitations

Table 2. Floodway Data

FLOODING SOURCE		FLOODWAY			BASE FLOOD ELEVATION			
Cross Section	Distance[1]	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet per Second)	Regulatory (Feet)	Without Floodway (Feet)	With Floodway (Feet)	Increase (Feet)
Piney Creek								
A	780	500	1,065	9.2	5,627.5	5,627.5	5,627.5	0.0
B	1,590	200	706	13.9	5,634.0	5,634.0	5,634.0	0.0
C	2,090	120	996	9.8	5,637.5	5,637.5	5,637.8	0.3
D	2,570	110	915	10.7	5,639.5	5,639.5	5,639.7	0.2
E	2,625	110	902	10.9	5,639.8	5,639.8	5,640.0	0.2
F	3,115	200	785	12.5	5,642.0	5,642.0	5,642.1	0.1
G	4,265	120	1,697	5.8	5,648.1	5,648.1	5,648.1	0.0
H	4,615	170	1,404	7.0	5,648.8	5,648.8	5,648.8	0.0
I	4,925	190	1,190	8.2	5,649.8	5,649.8	5,649.8	0.0
J	5,525	200	1,050	9.0	5,653.6	5,653.6	5,653.6	0.0
K	6,225	180	886	10.7	5,659.8	5,659.8	5,660.0	0 2
L	6,875	220	1,252	7.6	5,664.2	5,664.2	5,664.2	0.0
M	7,675	220	673	14.1	5,670.1	5,670.1	5,670.1	0.0
N	8,225	340	1,370	6.9	5,676.1	5,676.1	5,676.1	0.0
O	8,925	240	1,082	8.8	5,680.3	5,680.3	5,680.3	0.0
P	9,375	230	942	10.1	5,685.2	5,685.2	5,685.2	0.0
Q	9,875	200	1,237	7.5	5,690.8	5,690.8	5,691.0	0.2
R	10,135	180	954	9.7	5,962.6	5,692.6	5,692.6	0.0
S	10,935	180	174	7.9	5,696.9	5,696.9	5,696.9	0.0
T	11,735	180	962	9.6	5,702.0	5,702.0	5,702.0	0.0
U	12,485	290	2,469	3.8	5,705.3	5,705.3	5,705.3	0.0
V	12,590	180	1,052	8.8	5,705.6	5,705.6	5,705.7	0.1
W	13,240	130	1,640	5.6	5,709.8	5,709.8	5,710.0	0.2
X	14,690	260	1,108	8.4	5,717.1	5,717.1	5,717.1	0.0
Y	15,320	250	937	9.6	5,722.1	5,722.1	5,722.3	0.2
Z	15,920	460	1,861	4.8	5,726.3	5,726.3	5,726.4	0.1

[1]Feet Above Confluence With Cherry Creek

Table 2. Floodway Data

FLOODING SOURCE		FLOODWAY			BASE FLOOD ELEVATION			
Cross Section	Distance[1]	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet per Second)	Regulatory (Feet)	Without Floodway (Feet)	With Floodway (Feet)	Increase (Feet)
Piney Creek (Cont'd)								
AA	16,920	290	1,061	8.4	5,732.6	5,732.6	5,732.6	0.0
AB	17,720	270	708	12.6	5,740.4	5,740.4	5,740.4	0.0
AC	18,470	360	1,904	4.7	5,745.9	5,745.9	5,746.4	0.5
AD	19,370	640	878	9.8	5,754.6	5,754.6	5,755.1	0.5
AE	19,970	640	952	9.0	5,760.8	5,760.8	5,760.8	0.0
AF	20,770	660	1,370	6.3	5,767.6	5,767.6	5,767.6	0.0
AG	21,320	580	1,390	6.2	5,772.3	5,772.3	5,772.3	0.0
AH	21,920	160	664	13.0	5,777.3	5,777.3	5,777.3	0.0
AI	21,995	150	708	12.1	5,778.0	5,778.0	5,778.0	0.0
AJ	22,665	280	1,044	8.2	5,784.2	5,784.2	5,784.4	0.2
AK	23,165	270	726	11.8	5,789.2	5,789.2	5,789.2	0.0
AL	24,015	260	801	10.7	5,796.1	5,796.1	5,796.6	0.5
AM	24,715	540	2,182	3.4	5,801.0	5,801.0	5,801.5	0.5
AN	25,265	320	1,014	7.4	5,804.6	5,804.6	5,804.7	0.1
AO	25,625	310	886	8.5	5,808.8	5,808.8	5,808.9	0.1
AP	26,075	310	905	8.3	5,813.0	5,813.0	5,813.2	0.2

[1]Feet Above Confluence With Cherry Creek

Table 2. Floodway Data

FLOODING SOURCE		FLOODWAY			BASE FLOOD ELEVATION			
Cross Section	Distance	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet per Second)	Regulatory (Feet)	Without Floodway (Feet)	With Floodway (Feet)	Increase (Feet)
Prentice Gulch								
A	560[1]	104	352	2.6	5,947.1	5,947.1	5,947.2	0.1
B	1,190[1]	97	135	6.8	5,501.9	5,501.9	5,501.9	0.0
C	2,170[1]	90	214	4.3	5,515.0	5,515.0	5,515.1	0.1
D	2,230[1]	113	230	4.0	5,515.5	5,515.5	5,515.6	0.1
Quincy Gulch								
A	350[2]	47	92	9.0	5,414.6	5,414.6	5,415.4	0.8
B	1,125[2]	200	250	3.0	5,422.0	5,422.0	5,423.0	1.0
C	1,862[2]	30	136	6.0	5,428.8	5,428.8	5,429.8	1.0
D	2,150[2]	30	87	10.0	5,432.8	5,432.8	5,433.7	0.9
E	2,295[2]	88	136	6.0	5,444.3	5,444.3	5,444.8	0.5
F	3,600[2]	22	53	8.0	5,462.1	5,462.1	5,463.1	1.0

[1]Feet Above Confluence With Highline Canal

[2]Feet Above Confluence With Blackmer Gulch

Table 2. Floodway Data

FLOODING SOURCE		FLOODWAY			BASE FLOOD ELEVATION			
Cross Section	Distance[1]	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet per Second)	Regulatory (Feet)	Without Floodway (Feet)	With Floodway (Feet)	Increase (Feet)
Sable Ditch								
A	400	35	124	7.7	5,342.8	5,342.8	5,342.8	0.0
B	1,120	90	261	4.9	5,346.5	5,346.5	5,346.7	0.2
C	2,080	93	216	6.0	5,354.4	5,354.4	5,354.4	0.0
D	2,685	111	808	2.9	5,370.6	5,370.6	5,370.6	0.0
E	3,005	32	127	10.6	5,372.1	5,372.1	5,372.1	0.0
F	3,520	32	189	7.0	5,375.4	5,375.4	5,375.4	0.0
G	4,010	29	117	11.4	5,375.8	5,375.8	5,375.9	0.1
H	4,585	28	113	11.4	5,384.1	5,384.1	5,384.1	0.0
I	5,400	32	197	6.4	5,391.2	5,391.2	5,391.2	0.0
J	5,870	29	117	10.8	5,392.9	5,393.5	5,393.5	0.0
K	6,410	70	91	6.5	5,403.9	5,403.9	5,404.4	0.5
L	7,120	30	128	9.6	5,406.8	5,406.8	5,406.8	0.0
M	7,485	30	128	9.3	5,408.7	5,408.7	5,409.5	0.8
N	8,865	30	155	7.4	5,416.8	5,416.8	5,416.8	0.0
O	9,505	28	113	10.2	5,418.9	5,418.9	5,419.3	0.4
P	9,810	28	112	10.3	5,420.1	5,420.1	5,420.1	0.0
Sable Ditch Overflow								
A	700	88	444	3.8	5,342.2	5,342.2	5,342.6	0.4
B	1,998	140	318	4.6	5,346.0	5,346.0	5,346.0	0.0

[1]From Confluence With Toll Gate Creek

Table 2. Floodway Data

FLOODING SOURCE		FLOODWAY			BASE FLOOD ELEVATION			
Cross Section	Distance[1]	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet per Second)	Regulatory (Feet)	Without Floodway (Feet)	With Floodway (Feet)	Increase (Feet)
Sand Creek								
A	36,760	764	4,492	6.5	5,296.6	5,296.6	5,296.7	0.1
B	39,510	336	2,939	9.9	5,309.8	5,309.8	5,309.8	0.0
C	41,285	618	3,289	8.9	5,317.6	5,317.6	5,317.6	0.0
D	42,340	447	3,140	9.3	5,322.8	5,322.8	5,322.8	0.0
E	43,180	236	1,793	16.3	5,328.5	5,328.5	5,328.5	0.0
F	46,360	280	2,085	10.3	5,346.3	5,346.3	5,346.3	0.0
G	47,660	200	1,725	12.5	5,352.6	5,352.6	5,352.6	0.0
H	49,280	430	3,239	6.6	5,366.0	5,366.0	5,366.0	0.0
I	50,170	181	1,370	15.6	5,369.6	5,369.6	5,369.6	0.0
J	51,890	412	2,259	9.5	5,378.8	5,378.8	5,378.8	0.0
K	52,745	524	2,136	10.1	5,382.8	5,382.8	5,382.9	0.1
L	56,485	620	3,131	6.9	5,397.8	5,397.8	5,398.8	1.0
M	58,170	150	1,285	16.7	5,409.3	5,409.3	5,409.4	0.1
N	60,810	192	2,070	10.4	5,420.9	5,420.9	5,420.9	0.0
O	62,760	375	3,336	6.4	5,432.7	5,432.7	5,432.8	0.1
P	64,000	373	2,248	9.6	5,436.2	5,436.2	5,436.3	0.1
Q	65,160	550	4,650	3.9	5,439.4	5,439.4	5,439.5	0.1
R	66,140	398	1,848	9.9	5,440.6	5,440.6	5,440.8	0.2
S	68,025	317	1,477	12.4	5,450.4	5,450.4	5,450.4	0.0
T	68,640	326	2,530	7.3	5,455.7	5,455.7	5,455.7	0.0
U	69,350	507	2,840	6.5	5,557.7	5,457.7	5,457.8	0.1
V	70,065	340	2,274	8.1	5,461.9	5,461.9	5,462.1	0.2
W	72,230	810	3,695	5.0	5,473.0	5,473.0	5,473.4	0.4
X	75,010	1,394	4,500	4.1	5,486.0	5,486.0	5,486.0	0.0

[1]Feet Above Mouth

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Table 2. Floodway Data

FLOODING SOURCE		FLOODWAY			BASE FLOOD ELEVATION			
Cross Section	Distance	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet per Second)	Regulatory (Feet)	Without Floodway (Feet)	With Floodway (Feet)	Increase (Feet)
Slaughterhouse Gulch								
A	820[1]	345	326	5.2	5,322.6	5,322.6	5,322.6	0.0
B	1,420[1]	350	467	3.9	5,329.2	5,329.2	5,329.2	0.0
C	1,730[1]	200	402	4.6	5,335.2	5,355.2	5,355.2	0.0
D	3,000[1]	95	312	5.5	5,354.3	5,354.3	5,354.3	0.0
E	3,220[1]	105	468	3.[illegible]	5,355.3	5,355.3	5,355.3	0.0
F	4,150[1]	300	382	3.4	5,379.6	5,379.6	5,379.6	0.0
G	4,400[1]	270	776	1.6	5,383.7	5,383.7	5,383.7	0.0
H	4,980[1]	170	192	5.7	5,388.4	5,388.4	5,388.4	0.0
I	5,040[1]	85	193	7.0	5,398.6	5,398.6	5,398.6	0.0
J	6,340[1]	195	265	5.1	5,401.1	5,401.1	5,401.1	0.0
K	6,980[1]	90	164	8.2	5,410.3	5,410.3	5,410.3	0.0
South Tributary Slaughterhouse Gulch								
A	800[2]	195	95	4.9	5,389.4	5,389.4	5,389.4	0.0
B	1,050[2]	150	82	5.6	5,390.6	5,390.6	5,390.6	0.0
C	1,325[2]	180	92	5.0	5,402.0	5,402.0	5,402.0	0.0
D	1,805[2]	180	82	5.6	5,404.7	5,404.7	5,404.7	0.0
E	2,155[2]	110	106	4.4	5,409.6	5,409.6	5,409.6	0.0

[1]Feet Above Confluence With South Platte River

[2]Feet Above Confluence With Slaughterhouse Gulch

Table 2. Floodway Data

FLOODING SOURCE		FLOODWAY			BASE FLOOD ELEVATION			
Cross Section	Distance[1]	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet per Second)	Regulatory (Feet)	Without Floodway (Feet)	With Floodway (Feet)	Increase (Feet)
Toll Gate Creek								
A	2,960	433	2,002	12.0	5,338.2	5,338.2	5,338.3	0.1
B	3,880	264	1,899	12.6	5,342.8	5,342.8	5,343.2	0.4
C	4,450	160	1,411	17.0	5,347.3	5,347.3	5,347.3	0.0
D	4,990	156	1,695	13.6	5,349.8	5,349.8	5,350.6	0.8
E	5,770	368	2,028	11.3	5,356.4	5,356.4	5,356.5	0.1
F	6,250	302	2,168	10.6	5,358.9	5,358.9	5,359.1	0.2
G	7,000	239	1,715	13.4	5,360.5	5,360.5	5,360.5	0.0
H	7,480	126	1,597	14.4	5,362.5	5,362.5	5,362.5	0.0
I	7,910	139	1,483	15.2	5,364.3	5,364.3	5,364.3	0.0
J	8,080	145	1,707	13.2	5,365.9	5,365.9	5,365.9	0.0
K	8,845	134	1,466	15.4	5,368.4	5,368.4	5,368.4	0.0
L	9,570	128	1,576	14.3	5,372.3	5,372.3	5,372.3	0.0
M	10,410	135	1,744	12.6	5,376.6	5,376.6	5,376.6	0.0
N	10,720	182	1,881	11.2	5,379.5	5,379.5	5,379.5	0.0
O	10,870	175	1,584	13.2	5,380.1	5,380.1	5,380.1	0.0
P	11,390	600	5,087	4.2	5,383.0	5,383.0	5,383.4	0.4
Q	11,730	804	3,475	6.3	5,383.5	5,383.5	5,383.9	0.4
R	12,150	627	2,454	8.8	5,385.5	5,383.5	5,385.5	0.0
S	12,380	776	4,805	4.5	5,387.3	5,387.3	5,387.7	0.4
T	12,610	693	3,049	7.1	5,387.3	5,387.3	5,387.6	0.3
U	13,210	434	2,811	7.6	5,388.3	5,388.3	5,388.8	0.5
V	13,630	489	2,577	8.3	5,389.1	5,389.1	5,389.5	0.4
W	14,150	490	2,134	10.1	5,390.4	5,390.4	5,390.7	0.3
X	14,800	144	1,500	14.1	5,393.0	5,393.0	5,393.2	0.2
Y	15,080	494	4,089	5.1	5,401.9	5,401.9	5,402.0	0.1
Z	17,090	326	2,087	10.1	5,402.9	5,402.9	5,402.9	0.0
AA	18,860	590	3,394	6.2	5,408.0	5,408.0	5,408.2	0.2

[1]Feet Above Confluence With Sand Creek

Table 2. Floodway Data

FLOODING SOURCE		FLOODWAY			BASE FLOOD ELEVATION			
Cross Section	Distance[1]	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet per Second)	Regulatory (Feet)	Without Floodway (Feet)	With Floodway (Feet)	Increase (Feet)
West Toll Gate Creek								
AB	19,824	800	2,450	4.4	5,409.8	5,409.8	5,409.8	0.0
AC	21,044	510	3,390	5.0	5,413.6	5,413.6	5,413.6	0.0
AD	23,184	740	2,730	5.6	5,422.8	5,422.8	5,422.8	0.0
AE	23,594	1,110	5,110	3.0	5,427.0	5,427.0	5,427.3	0.3
AF	24,654	430	2,620	5.8	5,430.5	5,430.5	5,430.5	0.0
AG	26,274	860	2,373	6.4	5,441.1	5,441.1	5,441.1	0.0
AH	31,950	142	1,372	11.1	5,472.5	5,472.5	5,472.5	0.0
AI	32,105	152	1,080	14.1	5,471.9	5,471.9	5,471.9	0.0
AJ	32,495	220	1,662	9.1	5,475.5	5,475.5	5,475.5	0.0
AK	33,800	223	1,627	9.3	5,478.3	5,478.3	5,478.3	0.0
AL	35,202	234	1,886	8.1	5,481.5	5,481.5	5,481.5	0.0
AM	35,445	119	1,101	13.8	5,481.8	5,481.8	5,481.8	0.0
AN	35,491	235	2,350	6.5	5,489.0	5,489.0	5,489.0	0.0
AO	35,927	441	2,692	5.6	5,489.7	5,489.7	5,489.7	0.0
AP	36,310	826	3,109	4.9	5,501.3	5,501.3	5,501.3	0.0
AQ	36,877	628	3,025	5.0	5,503.8	5,503.8	5,503.8	0.0
AR	39,045	330	1,367	10.8	5,511.2	5,511.2	5,511.2	0.0
AS	39,875	250	1,966	7.4	5,515.8	5,515.8	5,515.9	0.1
AT	40,150	280	1,476	10.0	5,515.9	5,515.9	5,516.2	0.3
AU	40,750	294	1,736	8.5	5,520.2	5,520.2	5,520.2	0.0
AV	41,270	251	1,470	9.8	5,521.8	5,521.8	5,522.0	0.2
AW	41,930	258	1,194	9.4	5,526.0	5,526.0	5,526.0	0.0
AX	42,415	142	881	12.7	5,529.0	5,529.0	5,529.0	0.0
AY	42,655	158	763	14.7	531.5	531.5	531.5	0.0
AZ	43,905	284	881	12.7	535.9	535.9	535.9	0.0

[1]Feet Above Confluence With Sand Creek

Table 2. Floodway Data

FLOODING SOURCE		FLOODWAY			BASE FLOOD ELEVATION			
Cross Section	Distance[1]	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet per Second)	Regulatory (Feet)	Without Floodway (Feet)	With Floodway (Feet)	Increase (Feet)
West Toll Gate Creek (Cont'd)								
BA	44,558.5	78	431	26.0	537.5	537.5	537.5	0.0
BB	45,408.5	321	826	13.6	545.3	545.3	545.3	0.0
BC	46,708.5	296	815	13.7	551.6	551.6	551.6	0.0
BD	48,138.5	103	245	22.9	566.7	566.7	566.7	0.0
BE	49,638.5	96	238	22.4	578.3	578.3	578.3	0.0
BF	51,138.5	47	208	23.0	589.6	589.6	589.6	0.0
BG	52,783.5	100	335	13.4	604.2	604.2	604.2	0.0
BH	53,639.5	274	712	6.3	5,612.1	5,612.1	5,612.1	0.0
BI	55,139.5	344	948	4.7	5,624.7	5,624.7	5,624.7	0.0
BJ	56,939.5	148	615	7.3	5,639.1	5,639.1	5,639.1	0.0
BK	57,439.5	368	1,724	2.6	5,645.8	5,645.8	5,645.8	0.0
BL	58,439.5	223	518	8.7	5,647.5	5,647.5	5,647.5	0.0
BM	59,439.5	72	354	12.7	5,658.0	5,658.0	5,658.0	0.0

[1]Feet Above Confluence With Sand Creek

Table 2. Floodway Data

FLOODING SOURCE		FLOODWAY			BASE FLOOD ELEVATION			
Cross Section	Distance[1]	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet per Second)	Regulatory (Feet)	Without Floodway (Feet)	With Floodway (Feet)	Increase (Feet)
West Toll Gate Creek Tributary								
A	990	119	321	9.4	5,527.4	5,527.4	5,527.4	0.0
B	1,200	131	322	9.0	5,531.0	5,531.0	5,531.0	0.0
C	1,380	257	1,643	1.8	5,539.5	5,539.5	5,539.5	0.0
D	1,920	245	873	3.2	5,539.5	5,539.5	5,539.5	0.0
E	2,400	210	289	9.4	5,543.3	5,543.3	5,543.3	0.0
F	3,070	117	283	9.2	5,552.0	5,522.0	5,522.0	0.0
G	3,580	194	358	7.0	5,560.6	5,560.6	5,560.6	0.0
H	3,750	169	1,069	2.3	5,570.9	5,570.9	5,570.9	0.0
I	4,040	224	1,195	2.0	5,571.0	5,571.0	5,571.0	0.0
J	9,120	27	118	11.9	5,640.1	5,640.1	5,640.1	0.0
K	9,270	27	116	12.1	5,641.9	5,641.9	5,641.9	0.0
L	9,330	67	159	8.8	5,647.2	5,647.2	5,647.2	0.0
M	9,850	74	169	7.4	5,652.9	5,652.9	5,652.9	0.0
N	10,480	27	167	6.9	5,656.1	5,656.1	5,656.1	0.0
O	10,620	27	167	6.9	5,657.1	5,657.1	5,657.1	0.0
P	11,580	170	266	3.6	5,661.8	5,661.8	5,662.1	0.3
Q	12,320	400	200	4.1	5,671.6	5,671.6	5,671.8	0.2
R	13,240	199	231	2.8	5,683.6	5,683.6	5,683.9	0.3
S	13,920	71	93	5.6	5,689.9	5,689.9	5,689.9	0.0
T	14,615	102	119	3.6	5,696.1	5,696.1	5,696.1	0.0
U	15,280	40	58	5.2	5,700.5	5,700.5	5,700.5	0.0
V	15,415	90	94	3.2	5,704.1	5,704.1	5,704.1	0.0
W	15,470	158	282	1.1	5,706.1	5,706.1	5,706.7	0.6

[1]Feet Above Confluence With West Toll Gate Creek

Table 2. Floodway Data

FLOODING SOURCE		FLOODWAY			BASE FLOOD ELEVATION			
Cross Section	Distance[1]	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet per Second)	Regulatory (Feet)	Without Floodway (Feet)	With Floodway (Feet)	Increase (Feet)
East Toll Gate Creek								
A	1,500	361	992	8.3	5,410.4	5,410.4	5,410.6	0.2
B	2,520	140	1,044	7.8	5,416.9	5,416.9	5,417.0	0.1
C	3,695	120	733	11.0	5,422.2	5,422.2	5,422.9	0.7
D	4,250	55	628	12.9	5,424.0	5,424.0	5,424.3	0.3
E	4,940	120	1,803	4.5	5,431.5	5,431.5	5,431.5	0.0
F	5,890	115	609	13.3	5,433.4	5,433.4	5,433.4	0.0
G	6,430	968	1,903	6.6	5,441.0	5,441.0	5,441.0	0.0
H	7,430	820	1,007	8.0	5,447.0	5,447.0	5,447.0	0.0
I	8,600	575	1,443	5.4	5,449.6	5,449.6	5,450.3	0.7
J	12,860	374	891	9.1	5,471.3	5,471.3	5,471.8	0.5
K	13,650	309	1,434	5.6	5,477.9	5,477.9	5,478.7	0.8
L	14,770	370	1,763	4.6	5,487.4	5,487.4	5,487.5	0.1
M	15,370	418	898	9.0	5,491.4	5,491.4	5,491.4	0.0
N	16,110	368	1,389	5.8	5,497.4	5,497.4	5,498.3	0.9
O	16,250	492	1,270	6.2	5,499.0	5,499.0	5,499.9	0.9
P	16,900	262	1,173	6.5	5,501.5	5,501.5	5,502.2	0.7
Q	18,420	70	479	14.8	5,510.7	5,510.7	5,510.7	0.0

Table 2. Floodway Data

FLOODING SOURCE		FLOODWAY			BASE FLOOD ELEVATION			
Cross Section	Distance[1]	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet per Second)	Regulatory (Feet)	Without Floodway (Feet)	With Floodway (Feet)	Increase (Feet)
Westerly Creek								
A	7,000	1,670	7,146	0.3	5,306.1	5,306.1	5,306.1	0.0
B	7,470	695	6,800	0.3	5,306.1	5,306.1	5,306.1	0.0
C	8,750	380	2,014	1.4	5,306.1	5,306.1	5,306.1	0.0
D	12,340	650	2,480	1.1	5,325.0	5,325.0	5,325.9	0.9
E	12,850	555	1,079	2.8	5,325.3	5,325.3	5,326.0	0.7
F	26,220	432	387	5.3	5,433.5	5,433.5	5,433.5	0.0
G	27,180	377	349	4.7	5,441.5	5,441.5	5,441.6	0.1
H	27,530	105	191	6.8	5,442.4	5,442.4	5,442.4	0.0
I	28,230	294	245	4.9	5,459.7	5,459.7	5,459.7	0.0
J	28,470	150	300	5.5	5,469.0	5,469.0	5,469.0	0.0
K	31,465	32	152	2.9	5,469.0	5,469.0	5,469.0	0.0

[1]Feet Above Mouth

Table 2. Floodway Data

FLOODING SOURCE		FLOODWAY			BASE FLOOD ELEVATION			
Cross Section	Distance[1]	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet per Second)	Regulatory (Feet)	Without Floodway (Feet)	With Floodway (Feet)	Increase (Feet)
Unnamed Creek								
A	1,070	486	955	6.2	5,567.9	5,567.9	5,567.9	0.0
B	2,490	441	722	8.2	5,578.0	5,578.0	5,578.0	0.0
C	3,630	598	1,497	3.9	5,583.2	5,583.2	5,583.2	0.0
D	4,550	288	725	8.2	5,586.1	5,586.1	5,586.1	0.0
E	4,980	382	989	6.0	5,589.8	5,589.8	5,589.9	0.1
F	5,560	145	652	9.0	5,592.5	5,592.5	5,592.5	0.0
G	6,910	506	1,354	4.4	5,599.0	5,599.0	5,599.0	0.0
H	9,140	486	1,989	2.9	5,606.6	5,606.6	5,606.7	0.1
I	9,810	229	801	7.2	5,607.2	5,607.2	5,607.5	0.3
J	11,250	305	2,248	3.1	5,621.3	5,621.3	5,621.3	0.0
K	11,750	447	950	6.3	5,621.3	5,621.3	5,621.3	0.0

[1]Feet Above Confluence With West Toll Gate Creek

Table 2. Floodway Data

FLOODING SOURCE		FLOODWAY			BASE FLOOD ELEVATION			
Cross Section	Distance[1]	Width (Feet)	Section Area (Square Feet)	Mean Velocity (Feet per Second)	Regulatory (Feet)	Without Floodway (Feet)	With Floodway (Feet)	Increase (Feet)
West Bijou Creek								
A	72,000	2,200	5,412	6.4	5,164.7	5,164.7	5,165.7	1.0
B	74,320	1,100	3,458	10.4	5,176.2	5,176.2	5,176.2	0.0
C	75,120	650	5,721	6.1	5,179.9	5,179.9	5,180.2	0.3
D	75,520	350	3,389	10.3	5,179.9	5,179.9	5,180.2	0.3
E	75,620	350	3,227	10.8	5,180.3	5,180.3	5,180.5	0.2
F	76,320	510	4,290	8.1	5,184.5	5,184.5	5,184.7	0.2
G	77,120	450	3,266	9.7	5,186.7	5,186.7	5,187.1	0.4
H	78,020	300	2,070	15.3	5,186.9	5,186.9	5,187.2	0.3
I	78,270	450	2,087	15.2	5,187.1	5,187.1	5,187.4	0.3
J	78,870	450	4,815	6.6	5,193.4	5,193.4	5,193.6	0.2
K	80,270	600	5,111	6.2	5,196.0	5,196.0	5,196.5	0.5
L	81,170	450	2,960	10.7	5,198.6	5,198.6	5,198.7	0.1
M	82,370	200	3,567	8.9	5,204.9	5,204.9	5,204.9	0.0
N	83,270	320	3,390	9.4	5,207.5	5,207.5	5,207.5	0.0
O	85,120	550	4,337	7.3	5,212.3	5,212.3	5,213.3	1.0
P	86,820	300	2,938	10.8	5,218.2	5,218.2	5,218.2	0.0

[1]Feet Above Mouth

63

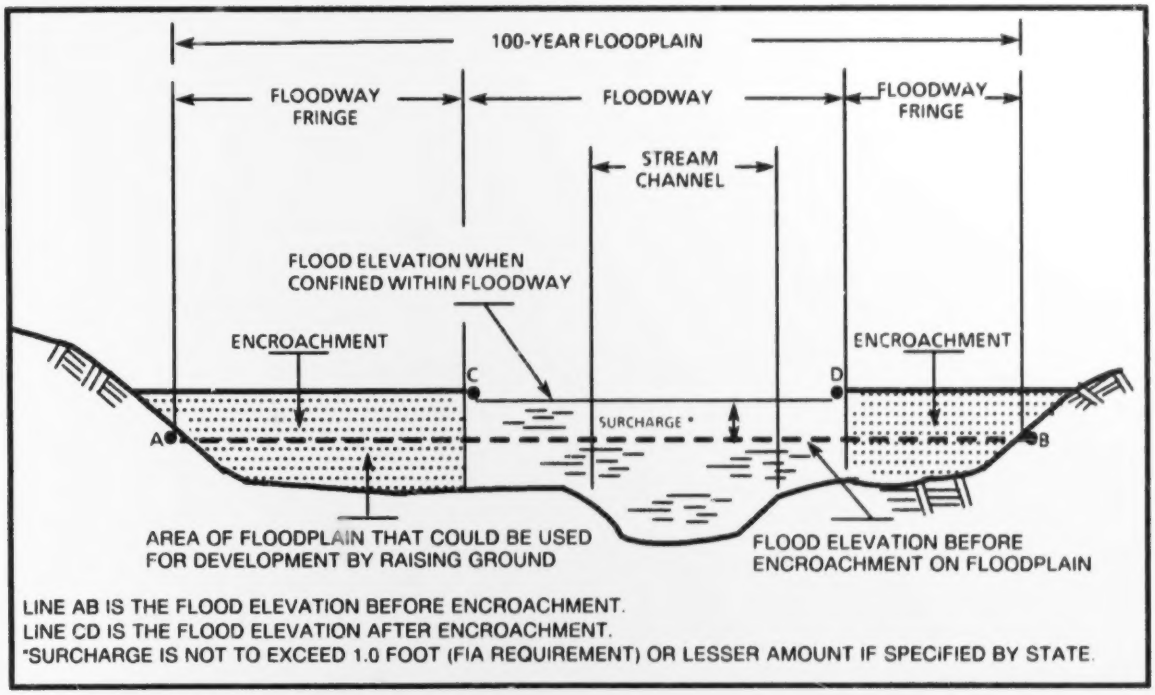
100-YEAR FLOODPLAIN
FLOODWAY FRINGE
FLOODWAY
FLOODWAY FRINGE
STREAM CHANNEL
FLOOD ELEVATION WHEN CONFINED WITHIN FLOODWAY
ENCROACHMENT
ENCROACHMENT
C
D
SURCHARGE *
A
B
AREA OF FLOODPLAIN THAT COULD BE USED FOR DEVELOPMENT BY RAISING GROUND
FLOOD ELEVATION BEFORE ENCROACHMENT ON FLOODPLAIN
LINE AB IS THE FLOOD ELEVATION BEFORE ENCROACHMENT.
LINE CD IS THE FLOOD ELEVATION AFTER ENCROACHMENT.
*SURCHARGE IS NOT TO EXCEED 1.0 FOOT (FIA REQUIREMENT) OR LESSER AMOUNT IF SPECIFIED BY STATE.

Figure 8. Floodway Schematic

5.0 INSURANCE APPLICATION

For flood insurance rating purposes, flood insurance zone designations are assigned to a community based on the results of the engineering analyses. These zones are as follows:

Zone A

Zone A is the flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the Flood Insurance Study by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no base flood elevations or depths are shown this zone.

Zone AE

Zone AE is the flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the Flood Insurance Study by detailed methods. Whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone AO

Zone AO is the flood insurance rate zone that corresponds to the areas of 100-year flooding (usually sheetflow on sloping terrain) where average depths are between 1 and 3 feet. Average wholefoot depths derived from the detailed hydraulic analyses are shown within this zone.

Zone X

Zone X is the flood insurance rate zone that corresponds to areas outside the 500-year floodplain, areas within the 500-year floodplain, areas of 100-year flooding where average depths are less than 1 foot, areas of 100-year flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 100-year flood by levees. No base flood elevations or depths are shown within this zone.

Zone D

Zone D is the flood insurance rate zone that corresponds to unstudied areas where flood hazards are undetermined, but possible.

6.0 FLOOD INSURANCE RATE MAP

The Flood Insurance Rate Map (FIRM) is designed for flood insurance and floodplain management applications.

For flood insurance applications, the map designates flood insurance rate zones as described in Section 5.0 and, in the 100-year floodplains that were studied by detailed methods, shows selected wholefoot base flood elevations (BFEs) or average depths. Insurance agents use the zones and BFEs in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

For floodplain management applications, the map shows by tints, screens, and symbols, the 100- and 500-year floodplains, the floodways, and the locations of selected cross sections used in the hydraulic analyses and floodway computations.

7.0 OTHER STUDIES

The reaches of East Toll Gate Creek from Chambers Road to 1,300 feet upstream and from South Buckley Road to 0.8 mile upstream were analyzed by Merrick and Company and Greiner Engineering Sciences, Inc., respectively (References 18 and 19, respectively). The revised hydraulic analyses for West Toll Gate Creek from Mississippi Avenue to approximately 800 feet upstream of Mexico Avenue, and the portion of West Toll Gage Creek from South Buckley Road upstream to East Hampden Avenue were performed by the City of Aurora Engineering Division (References 21 and 22). The analyses for the portion of West Toll Gate Creek between East Hampden and East Quincy Avenues was performed by

Merrick and Company (Reference 19). The hydrologic analyses for all the revisions were originally performed by the COE and Gingery and Associates for the effective FIS for Aurora (Reference 2).

Revised hydrologic and hydraulic analyses for the portion of Cherry Creek from Cherry Creek State Recreation Area to upstream of the Arapahoe Douglas County line were performed by Greiner Engineering Sciences, Inc. as a part of the River Run Development Report (Reference 17).

The revised hydraulic analyses for portions of Prentice Gulch, Willow Creek, Greenwood Gulch, Spring Creek, Goldsmith Gulch, SJCD 6100, SJCD 6200, Dutch Creek, Coon Creek, and Lee Gulch were taken from published UDFCD reports (References 44, 60, 61, 62, 63, and 64).

Flood Insurance Studies have been prepared for the City and County of Denver and Adams, Douglas, and Jefferson Counties (References 65, 66, 67, and 68, respectively). Those studies are in general agreement with this study.

Historical data relating to the maps prepared for each community are presented in the Community Map History data (Table 3).

8.0 LOCATION OF DATA

Information concerning the pertinent data used in the preparation of this study can be obtained by contacting the Natural and Technological Hazards Division, FEMA, Denver Federal Center, Building 710, Box 25267, Denver, Colorado 80225-0267.

9.0 BIBLIOGRAPHY AND REFERENCES

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COMMUNITY NAME	INITIAL IDENTIFICATION	FLOOD HAZARD BOUNDARY MAP REVISION DATE(S)	FIRM EFFECTIVE DATE	FIRM REVISION DATE(S)
Cherry Hills Village, City of	May 10, 1974		August 1, 1978	
Columbine Valley, Town of	February 1, 1974	April 23, 1976	June 15, 1978	December 2, 1980
Englewood, City of	February 9, 1972		July 1, 1974	April 11, 1975 June 24, 1977 July 28, 1978 December 5, 1979
Glendale, City of	April 17, 1989		None	
Greenwood Village, City of	December 27, 1974		January 5, 1978	December 16, 1980
Sheridan, City of	May 3, 1974		June 13, 1976	December 4, 1985
Unincorporated Areas	December 20, 1974		August 15, 1977	

TABLE 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO AND INCORPORATED AREAS

COMMUNITY MAP HISTORY

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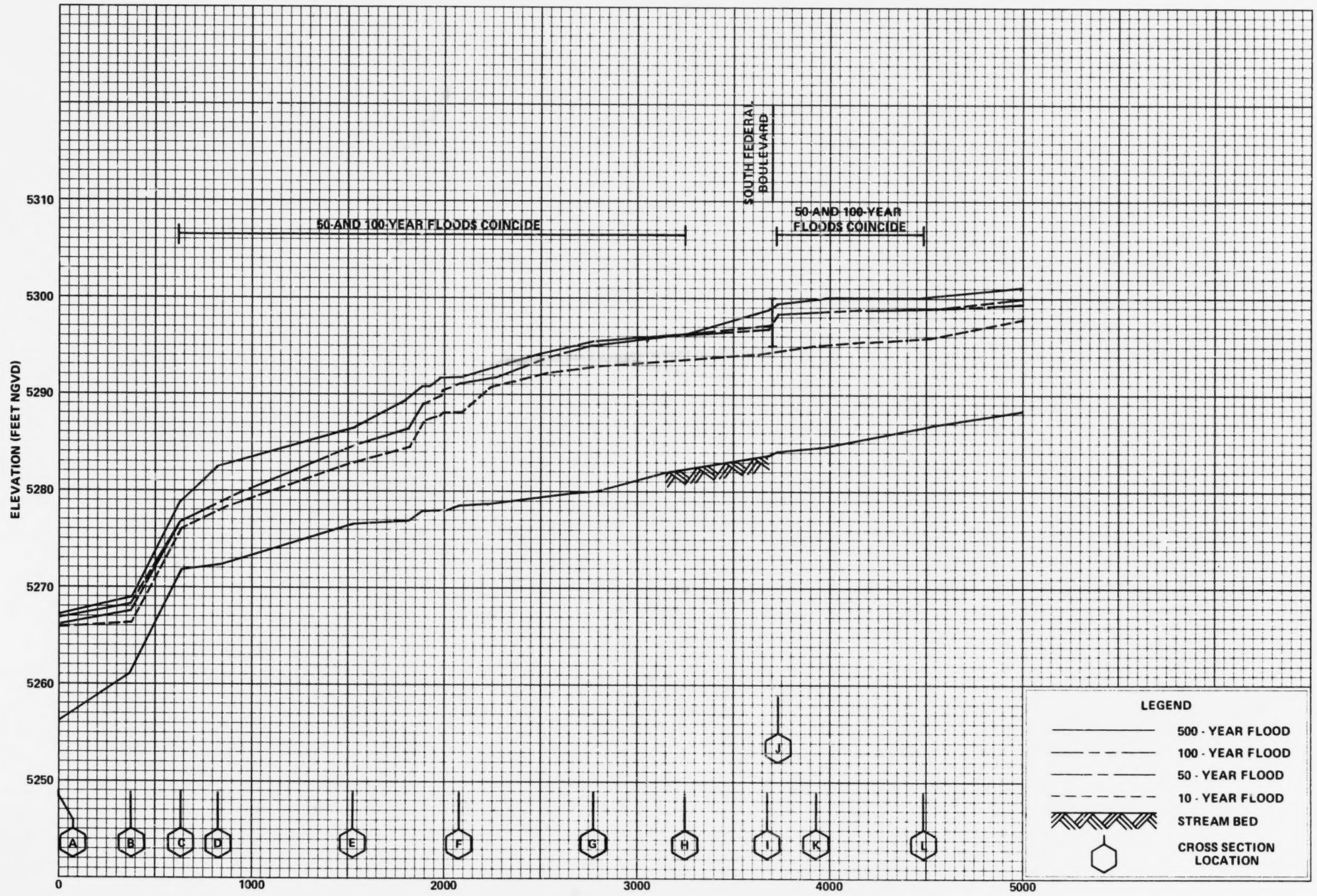

FLOOD PROFILES

BEAR CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
AND INCORPORATED AREAS

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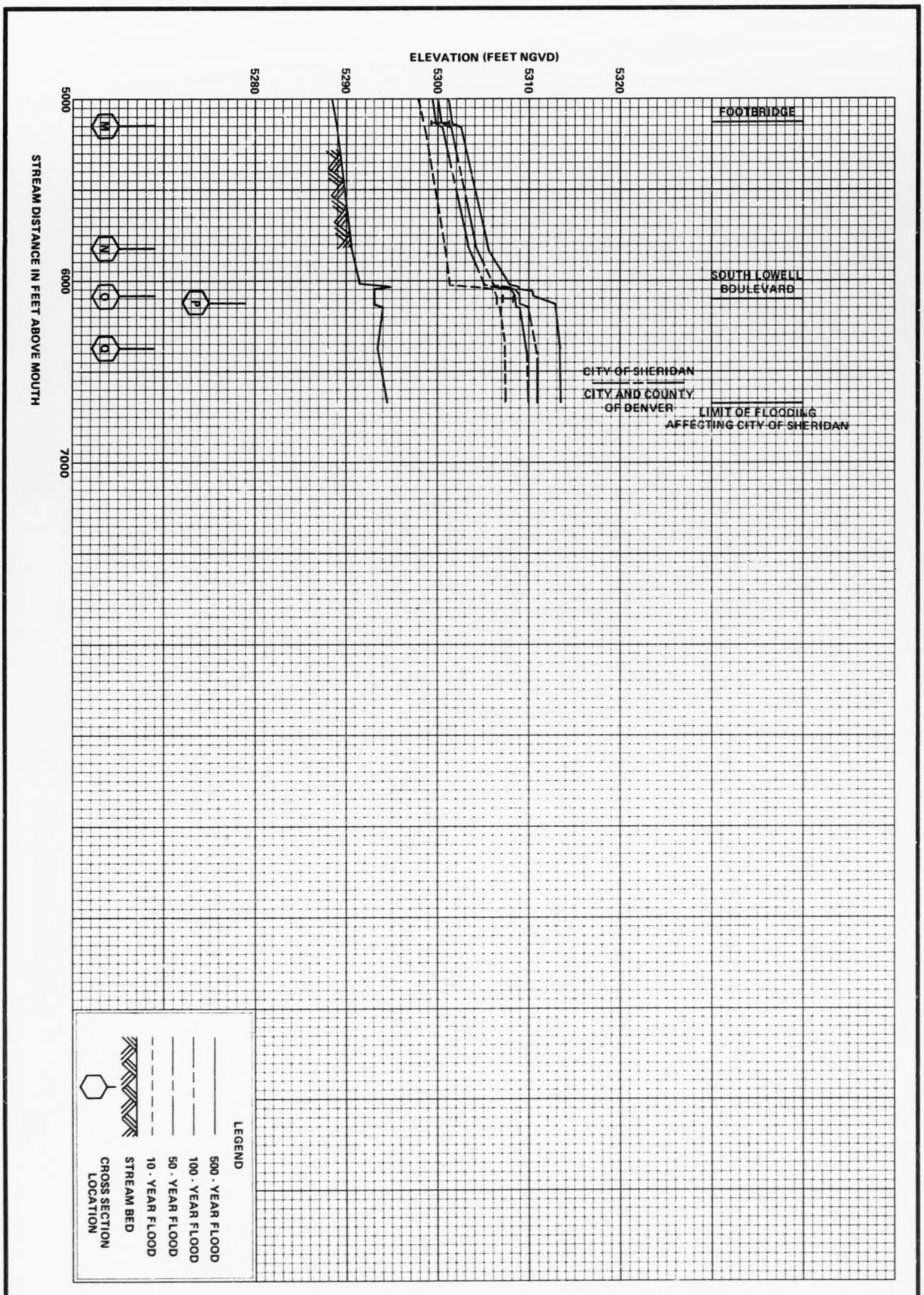

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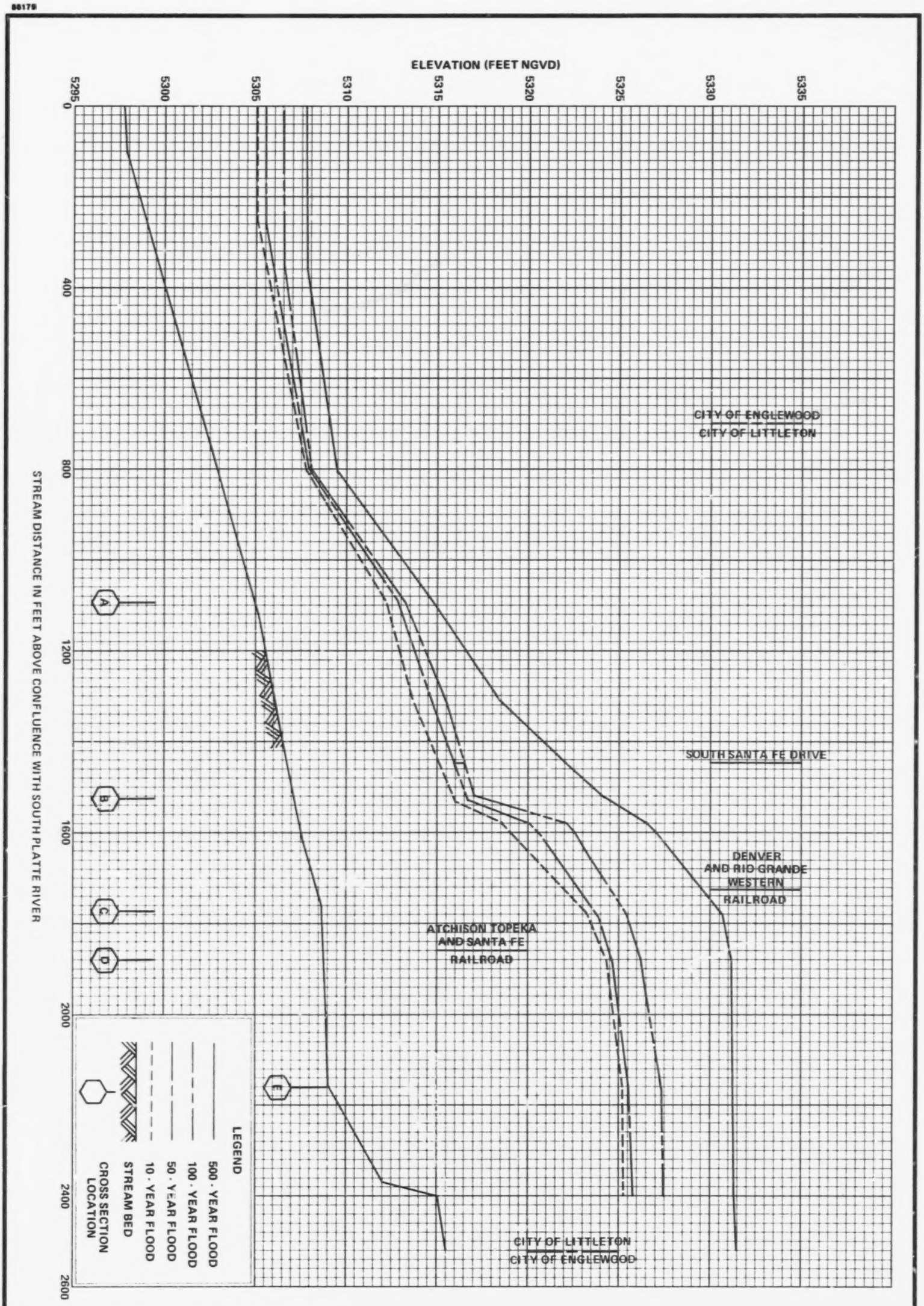


03P	FEDERAL EMERGENCY MANAGEMENT AGENCY ARAPAHOE COUNTY, CO AND INCORPORATED AREAS	FLOOD PROFILES BIG DRY CREEK

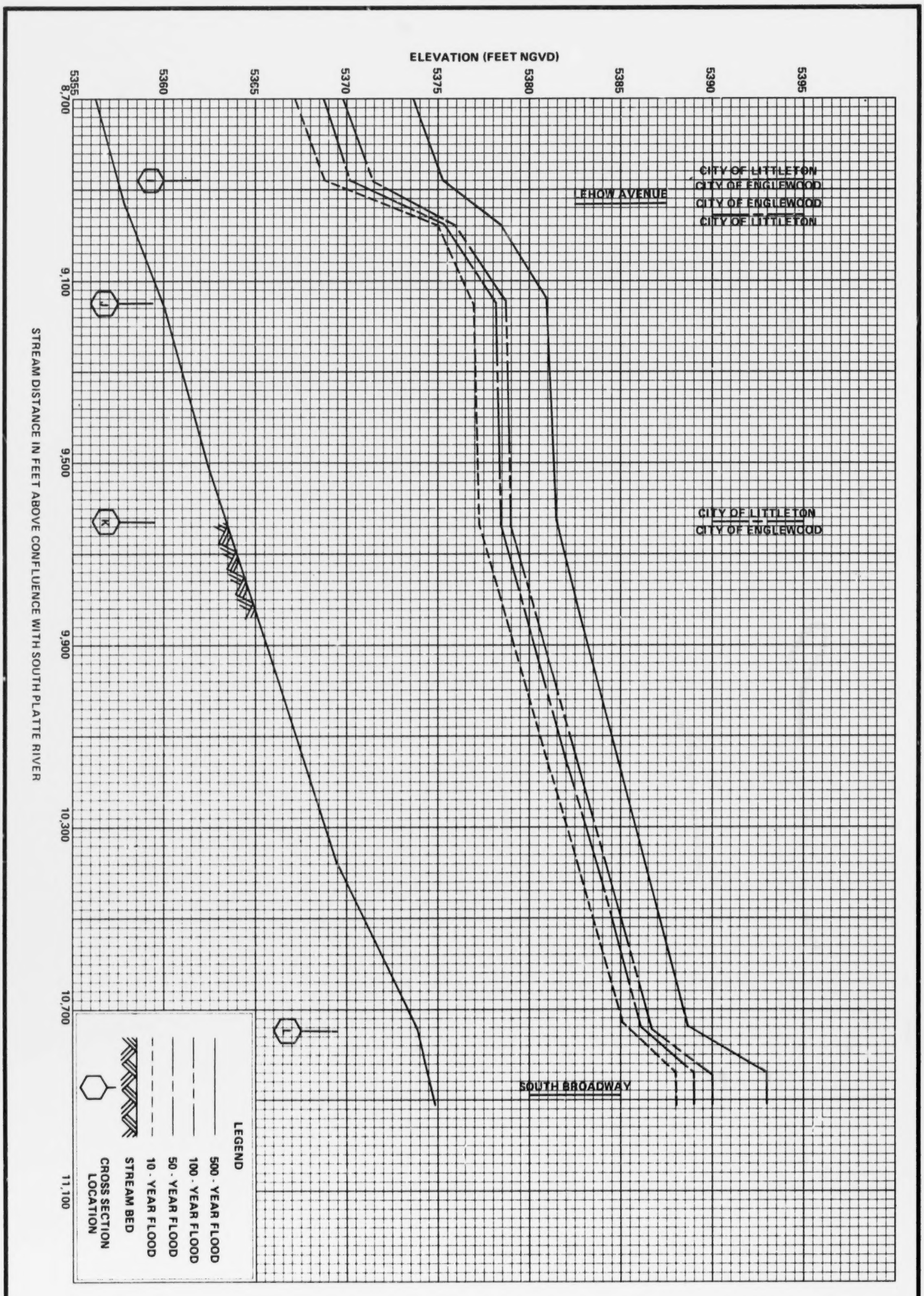
FLOOD PROFILES

BIG DRY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
AND INCORPORATED AREAS

04P



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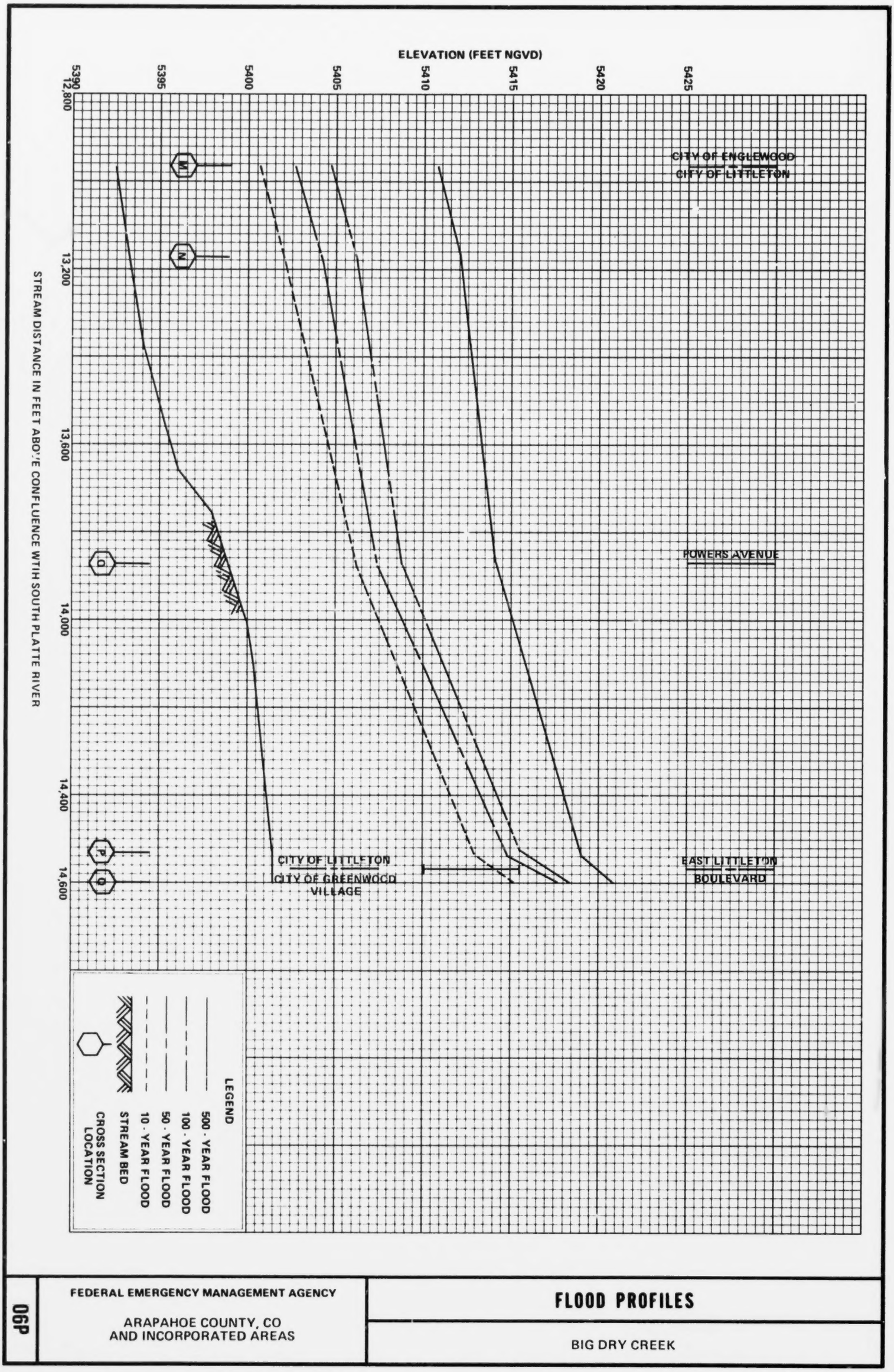

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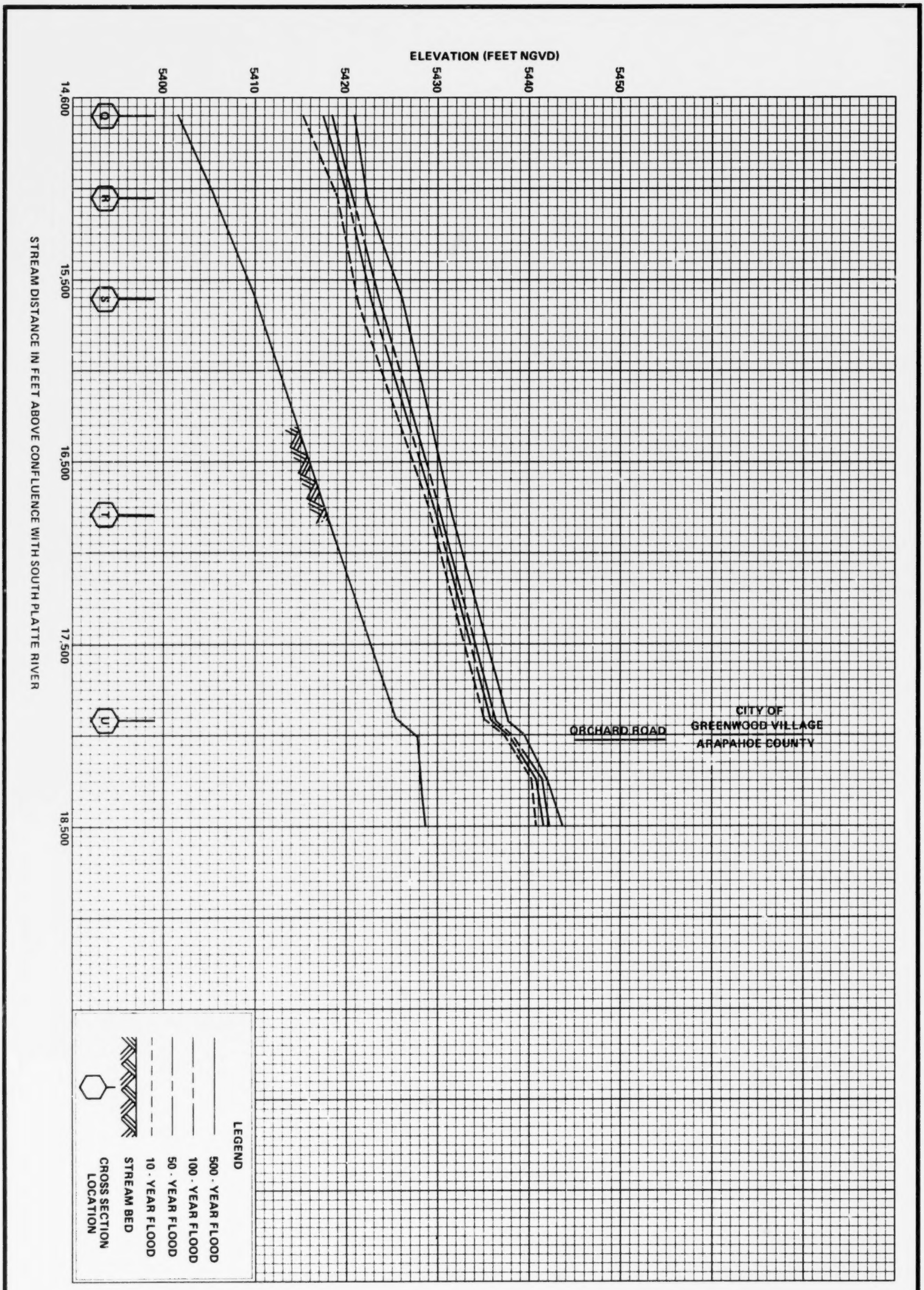
06P

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
AND INCORPORATED AREAS

FLOOD PROFILES

BIG DRY CREEK



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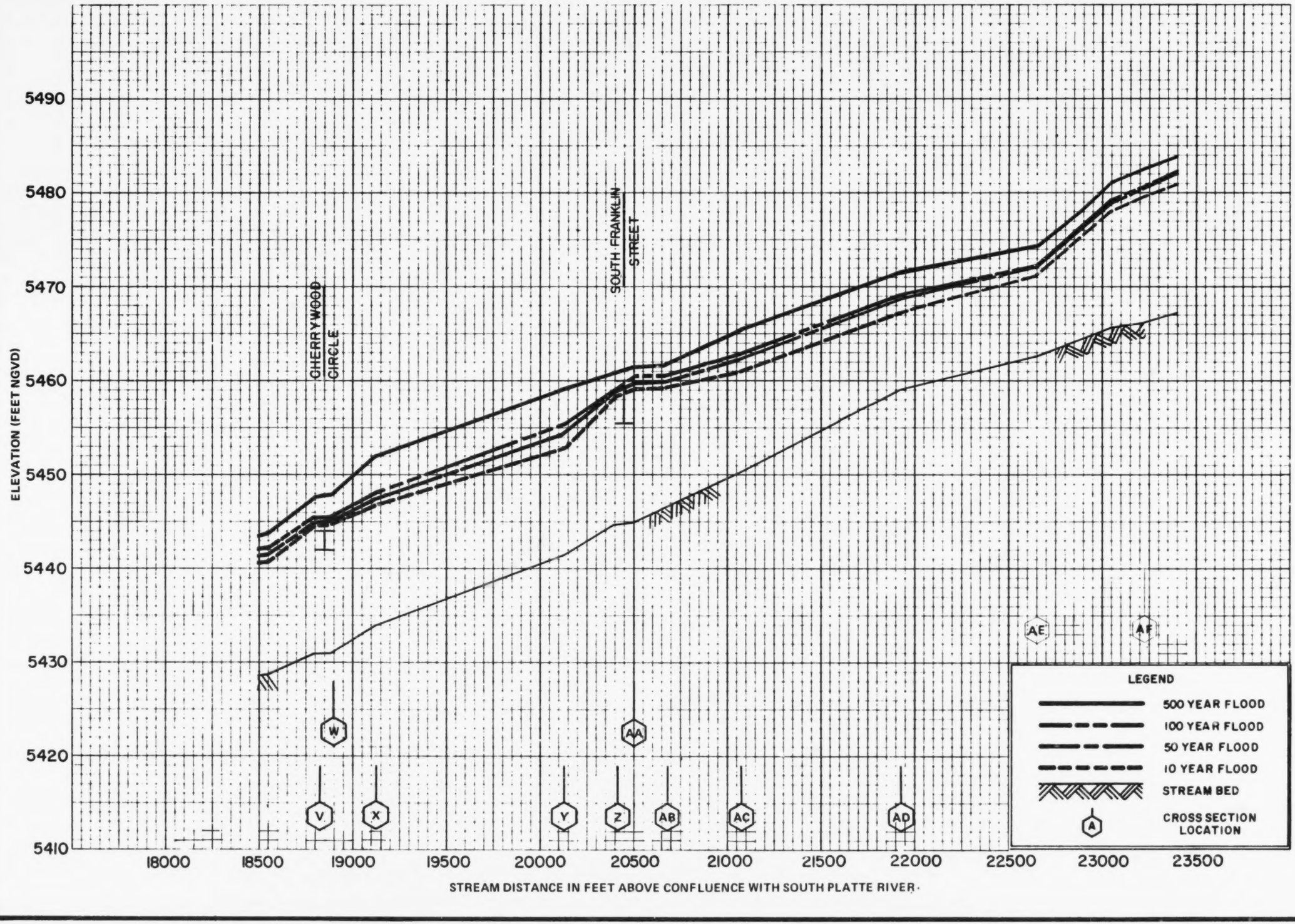


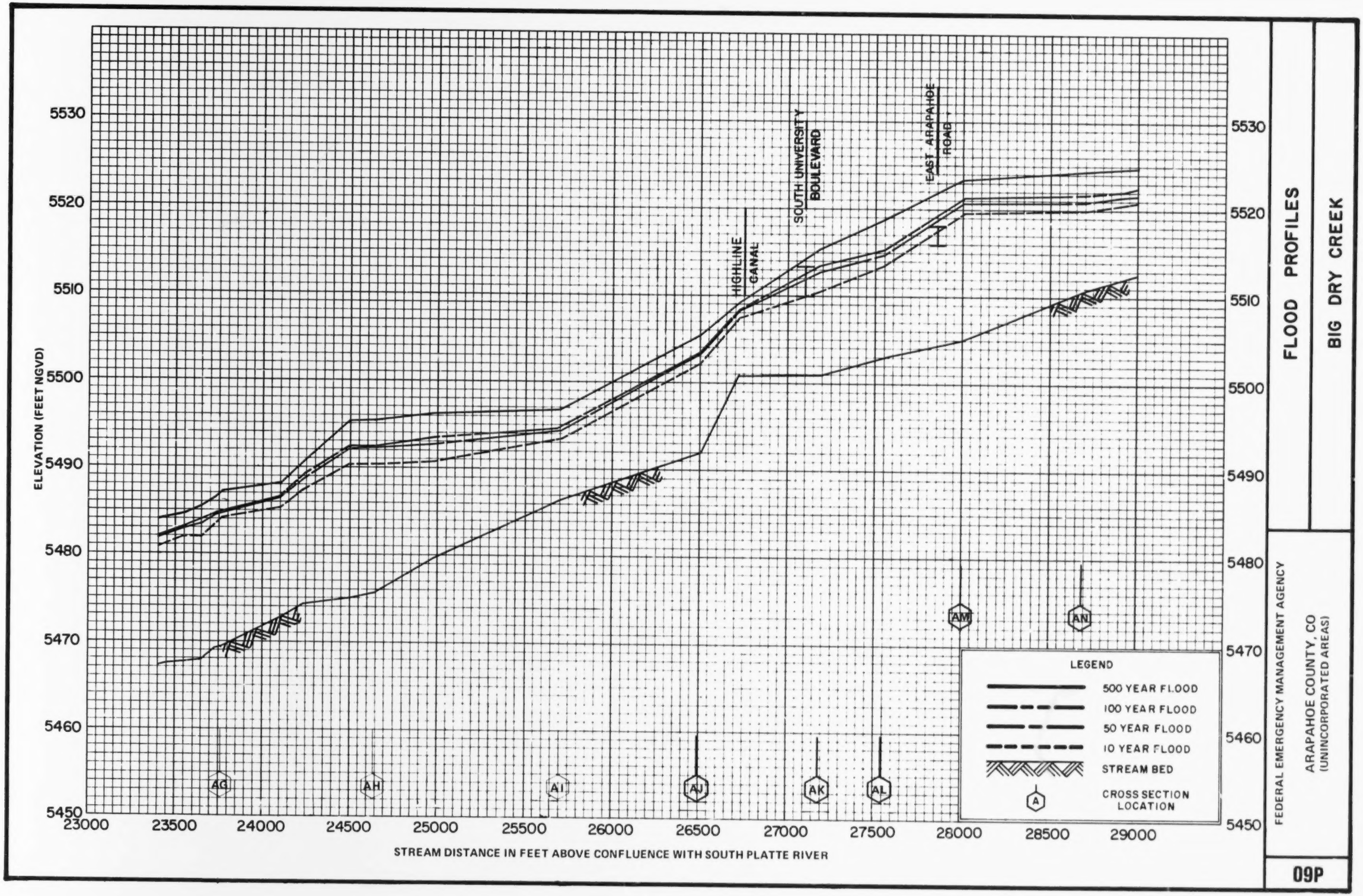
FLOOD PROFILES

BIG DRY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
(UNINCORPORATED AREAS)

08P



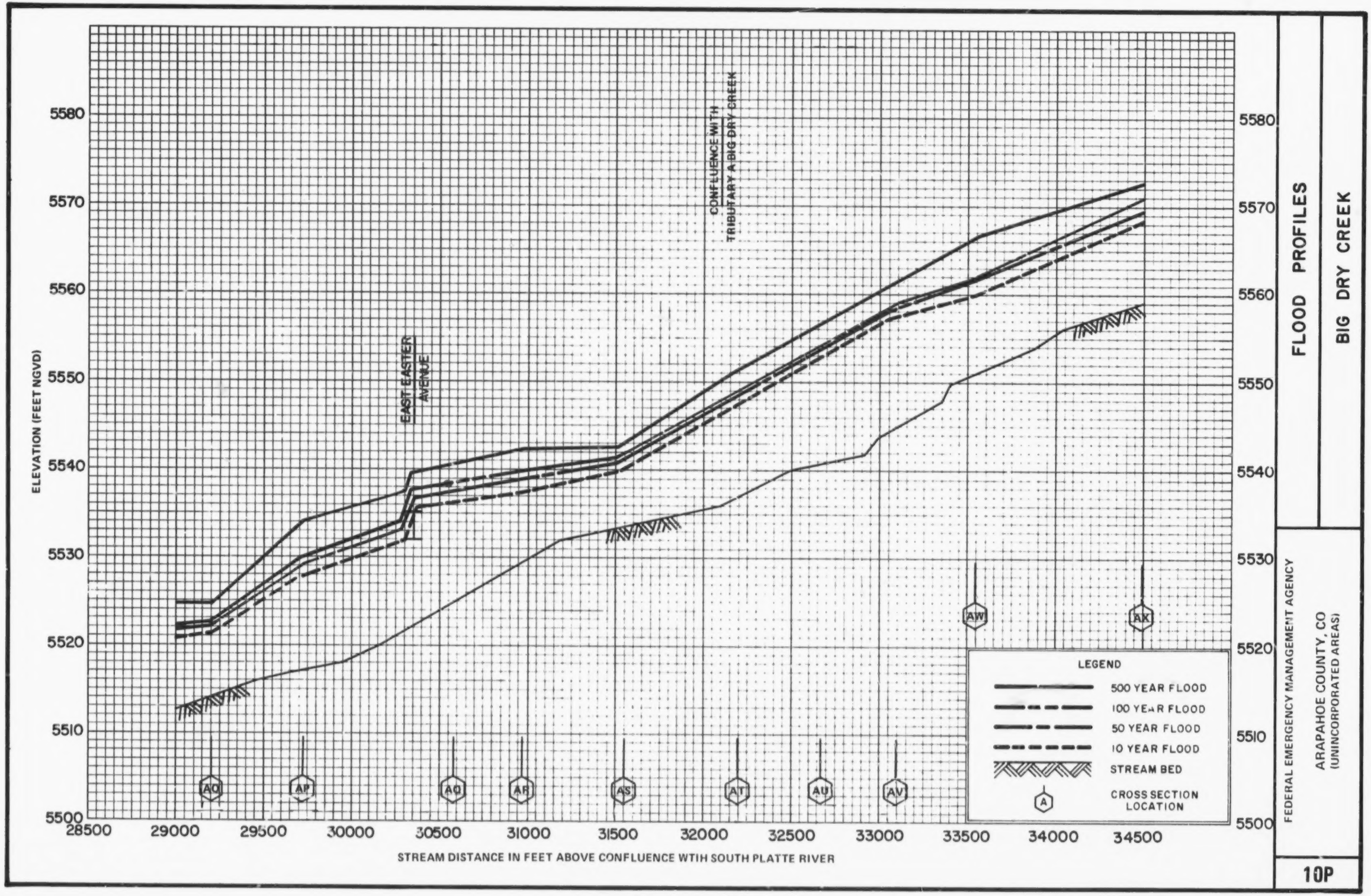
FLOOD PROFILES

BIG DRY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
(UNINCORPORATED AREAS)

09P



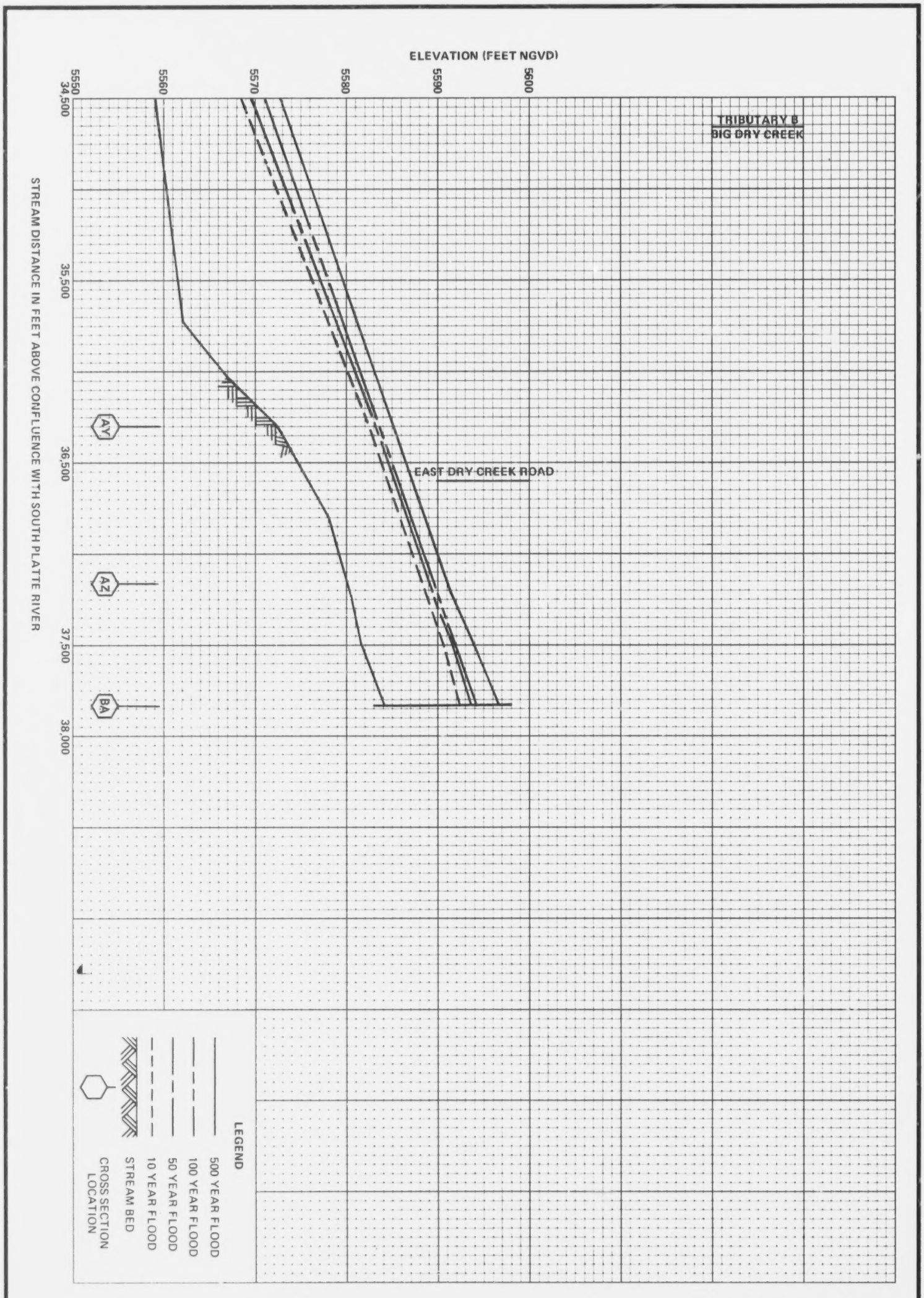
FLOOD PROFILES

BIG DRY CREEK

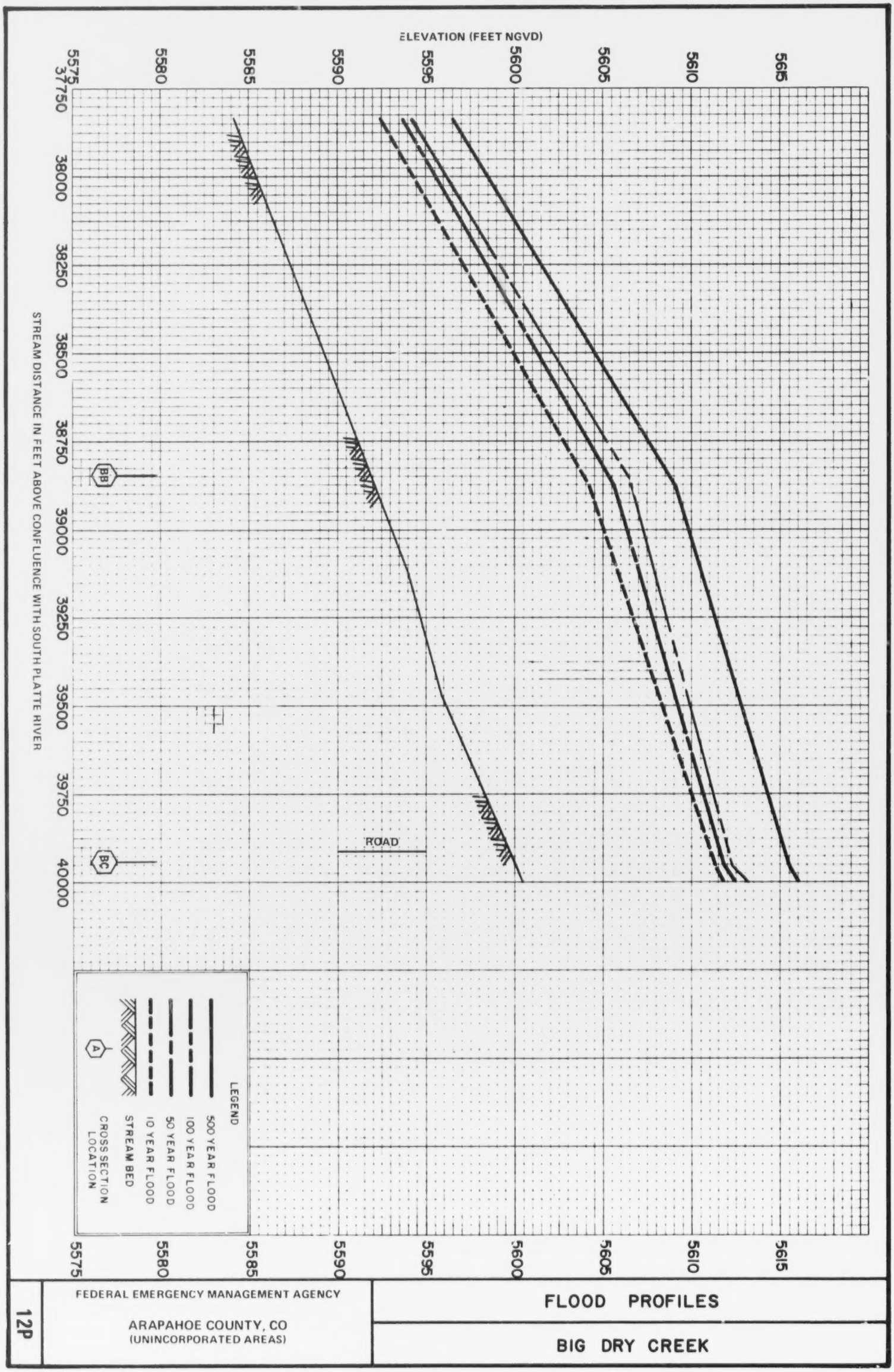
FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
(UNINCORPORATED AREAS)

10P



11P	FEDERAL EMERGENCY MANAGEMENT AGENCY ARAPAHOE COUNTY, CO (UNINCORPORATED AREAS)	**FLOOD PROFILES** BIG DRY CREEK



FEDERAL EMERGENCY MANAGEMENT AGENCY

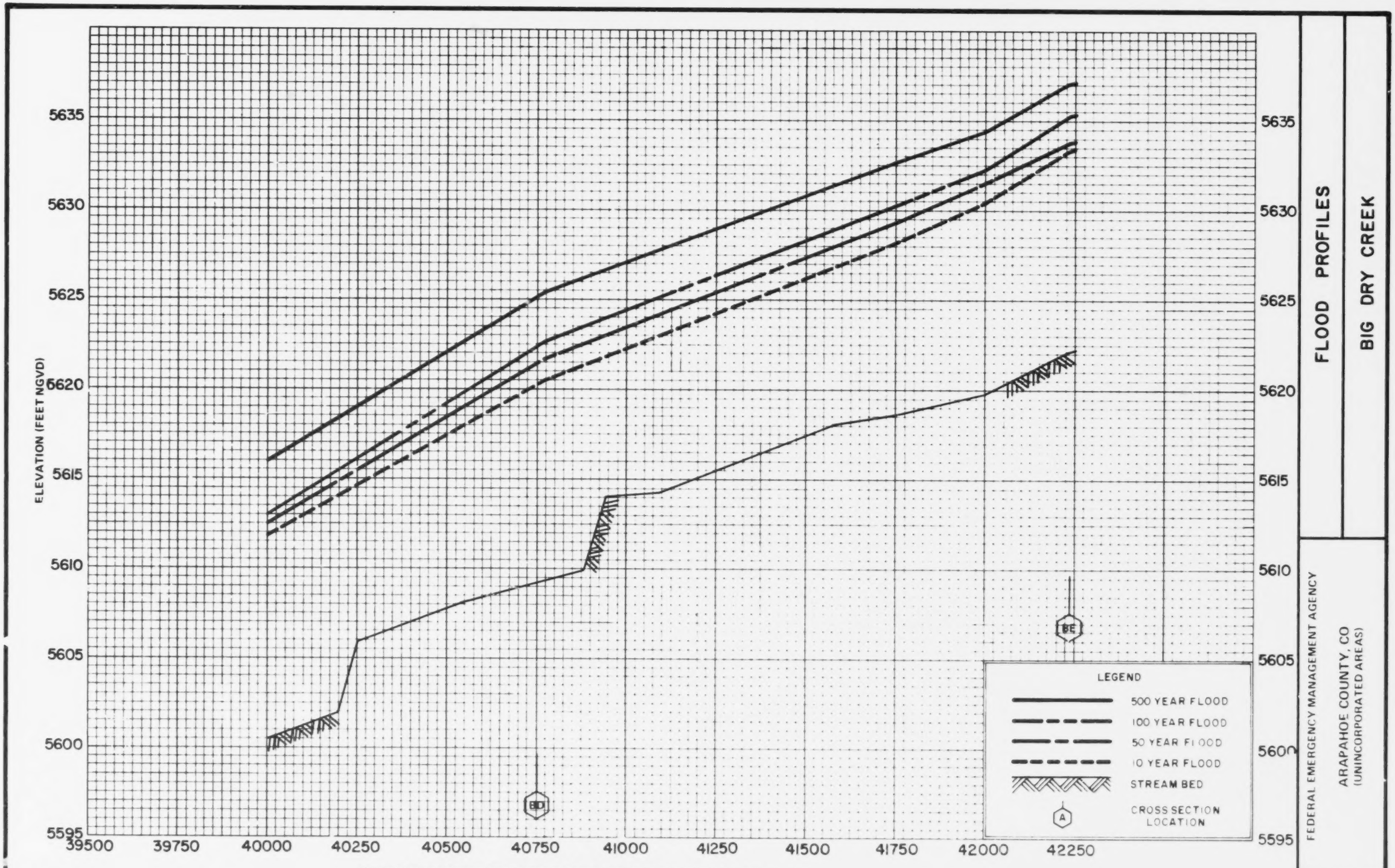
ARAPAHOE COUNTY, CO
(UNINCORPORATED AREAS)

FLOOD PROFILES

BIG DRY CREEK

12P

84



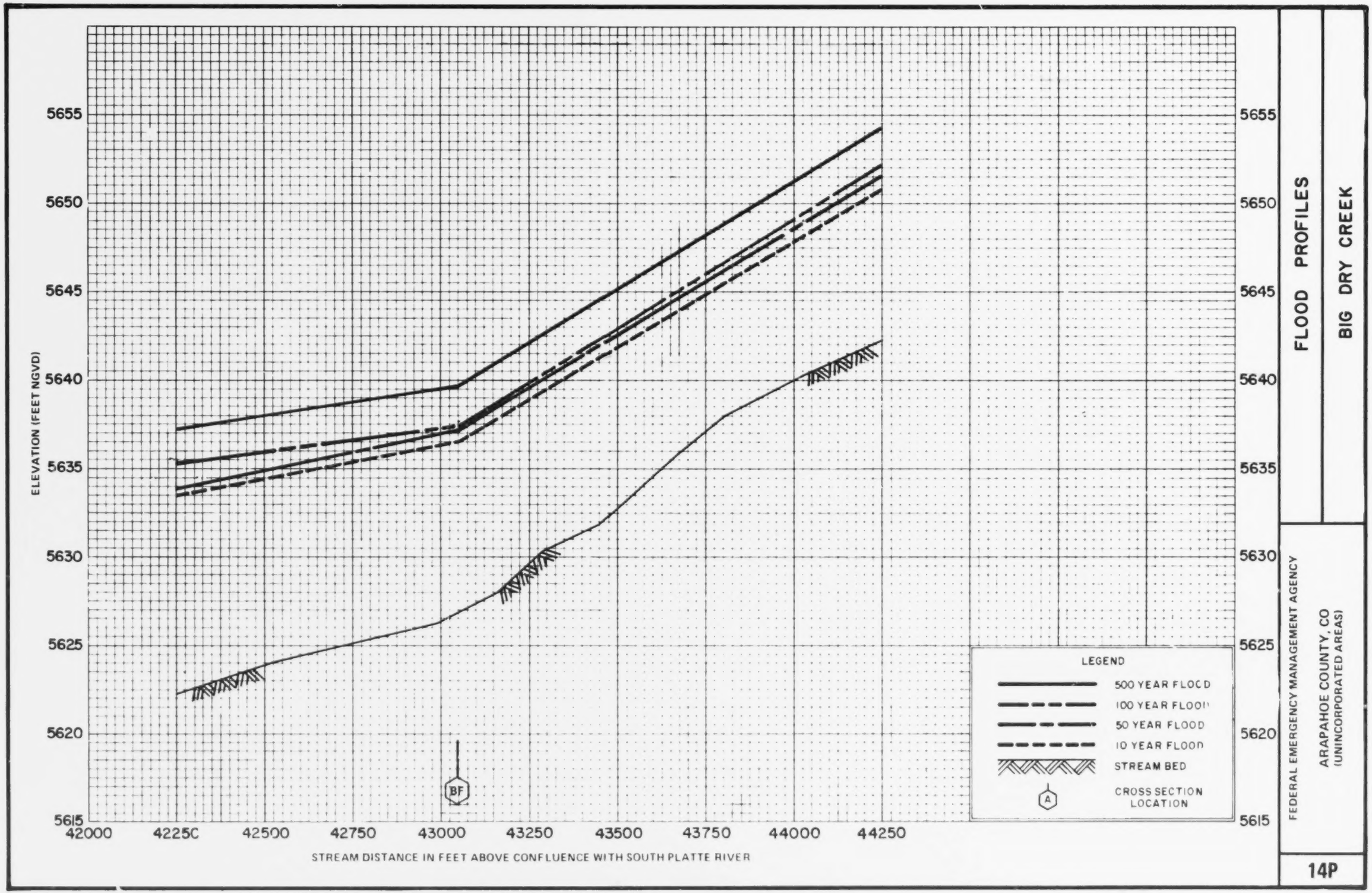
FLOOD PROFILES

BIG DRY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
(UNINCORPORATED AREAS)

13P



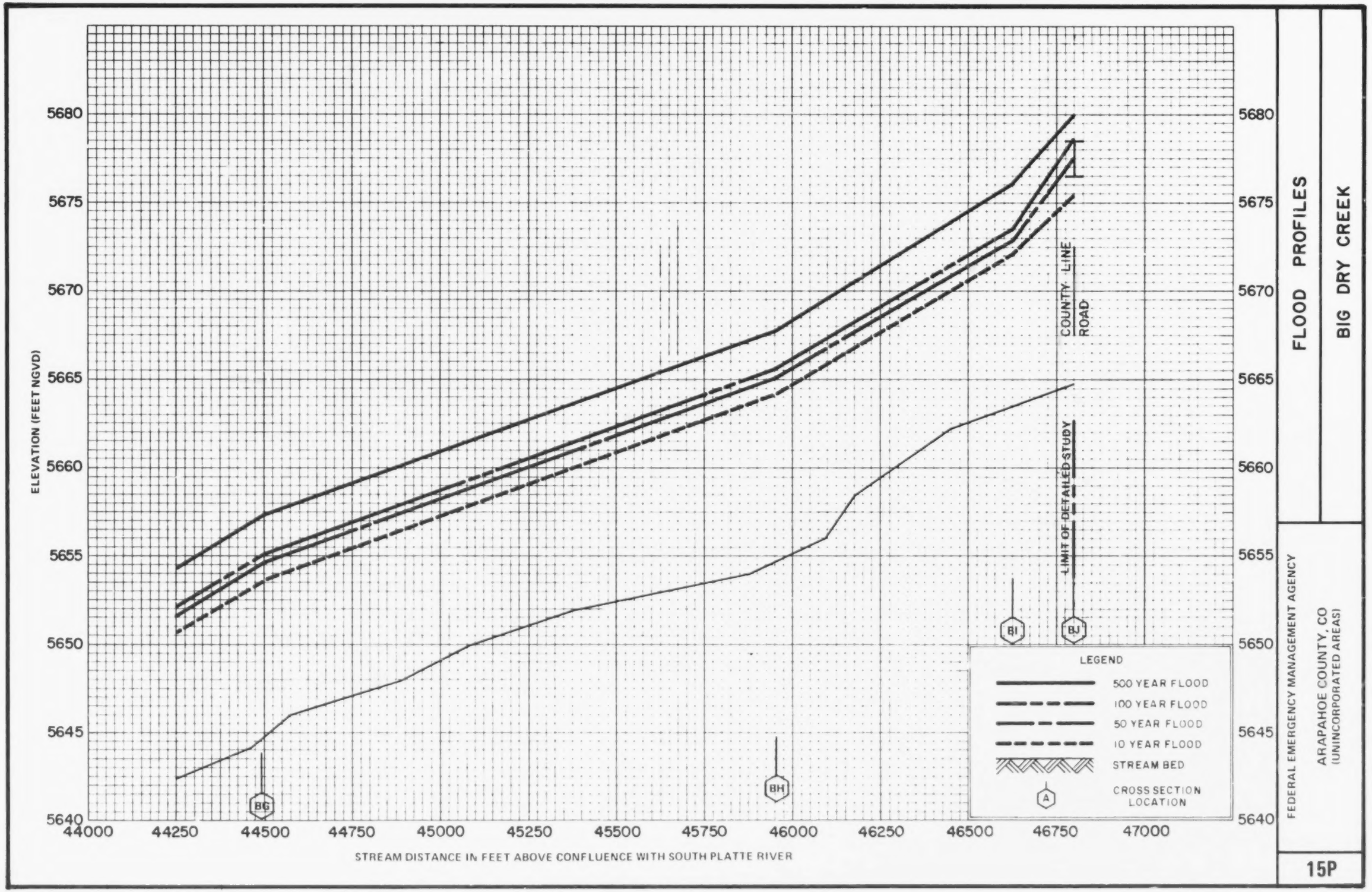
FLOOD PROFILES

BIG DRY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
(UNINCORPORATED AREAS)

14P



FLOOD PROFILES

BIG DRY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
(UNINCORPORATED AREAS)

15P

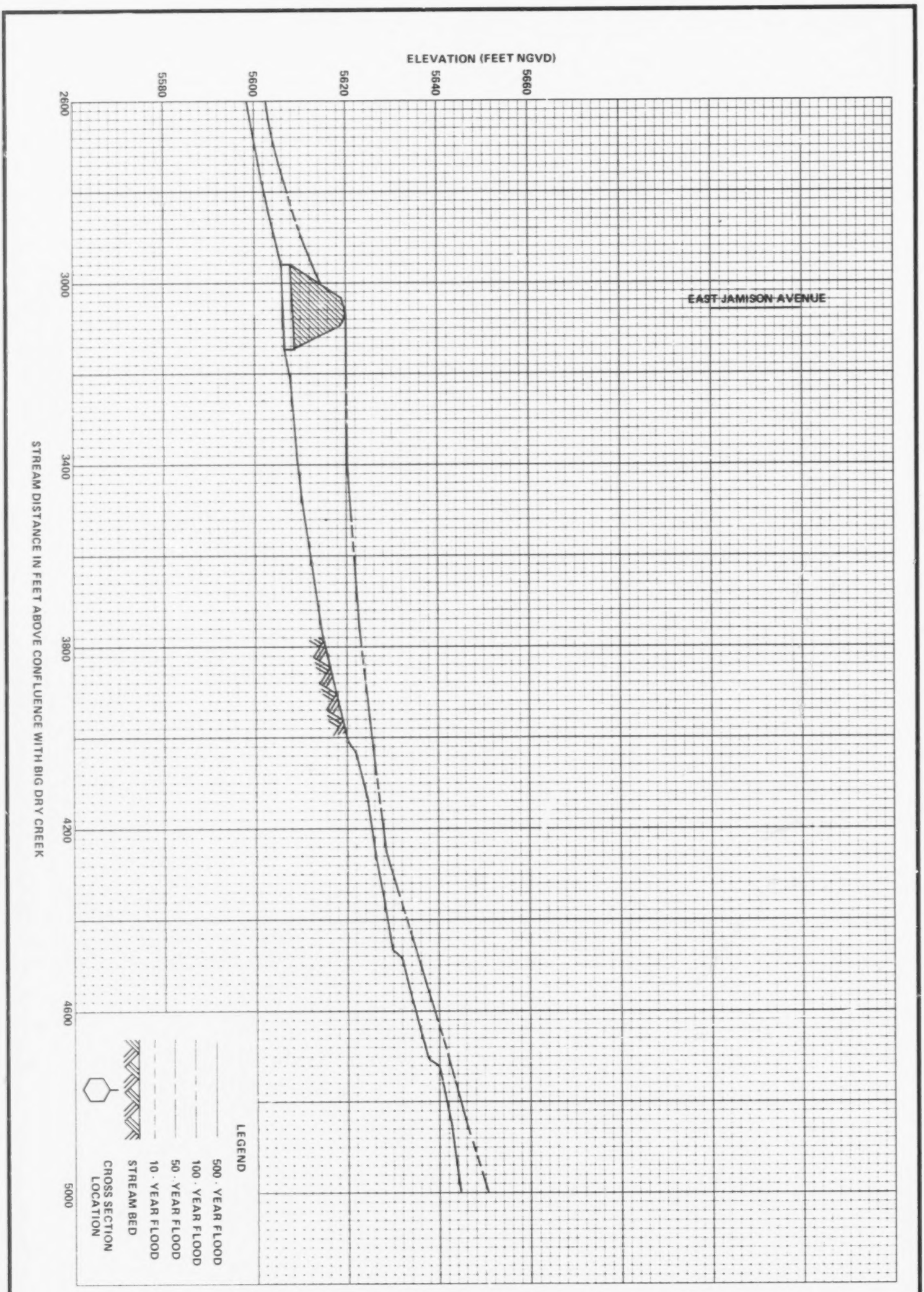
FLOOD PROFILES

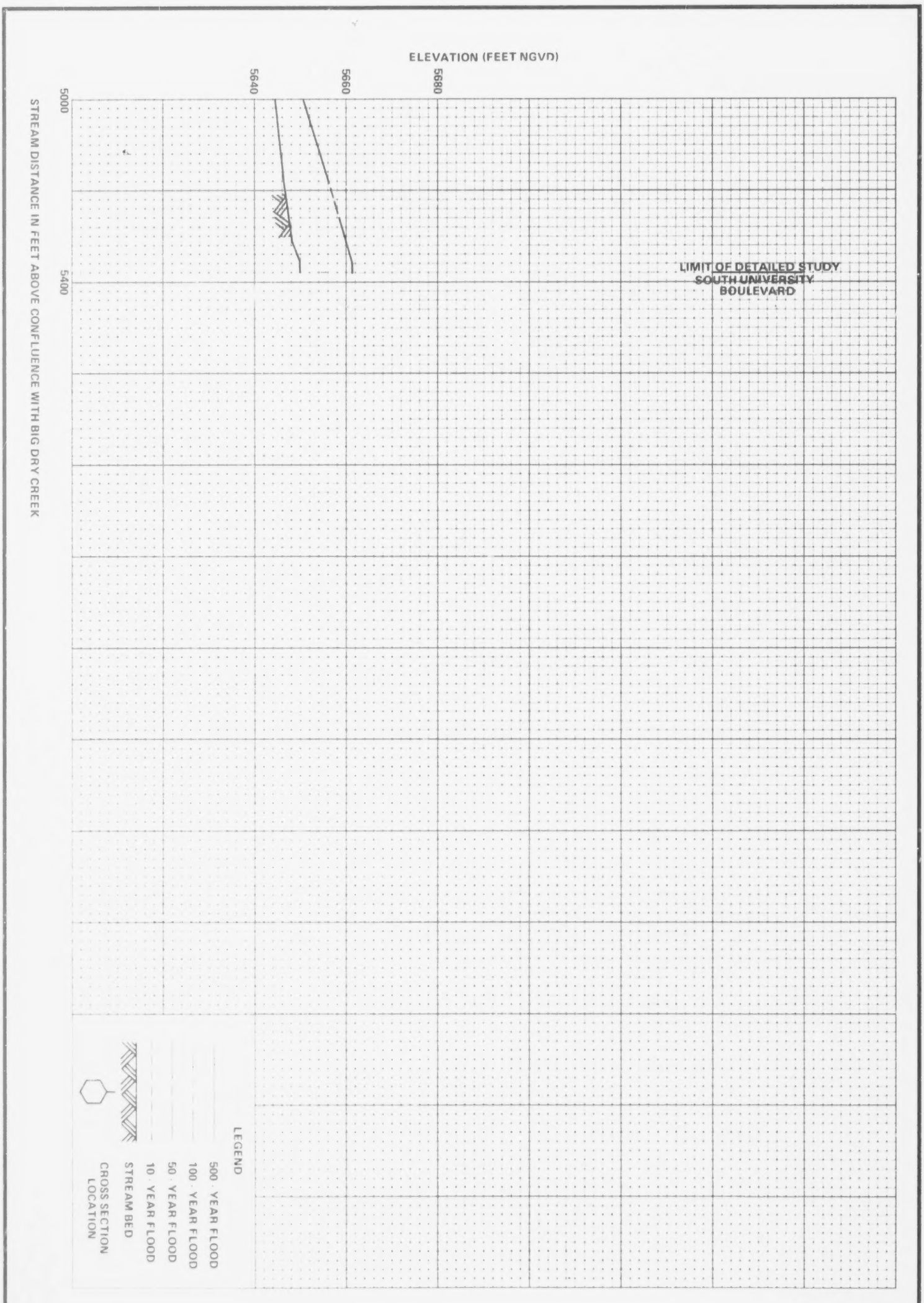
BIG DRY CREEK TRIBUTARY A

FEDERAL EMERGENCY MANAGEMENT AGENCY

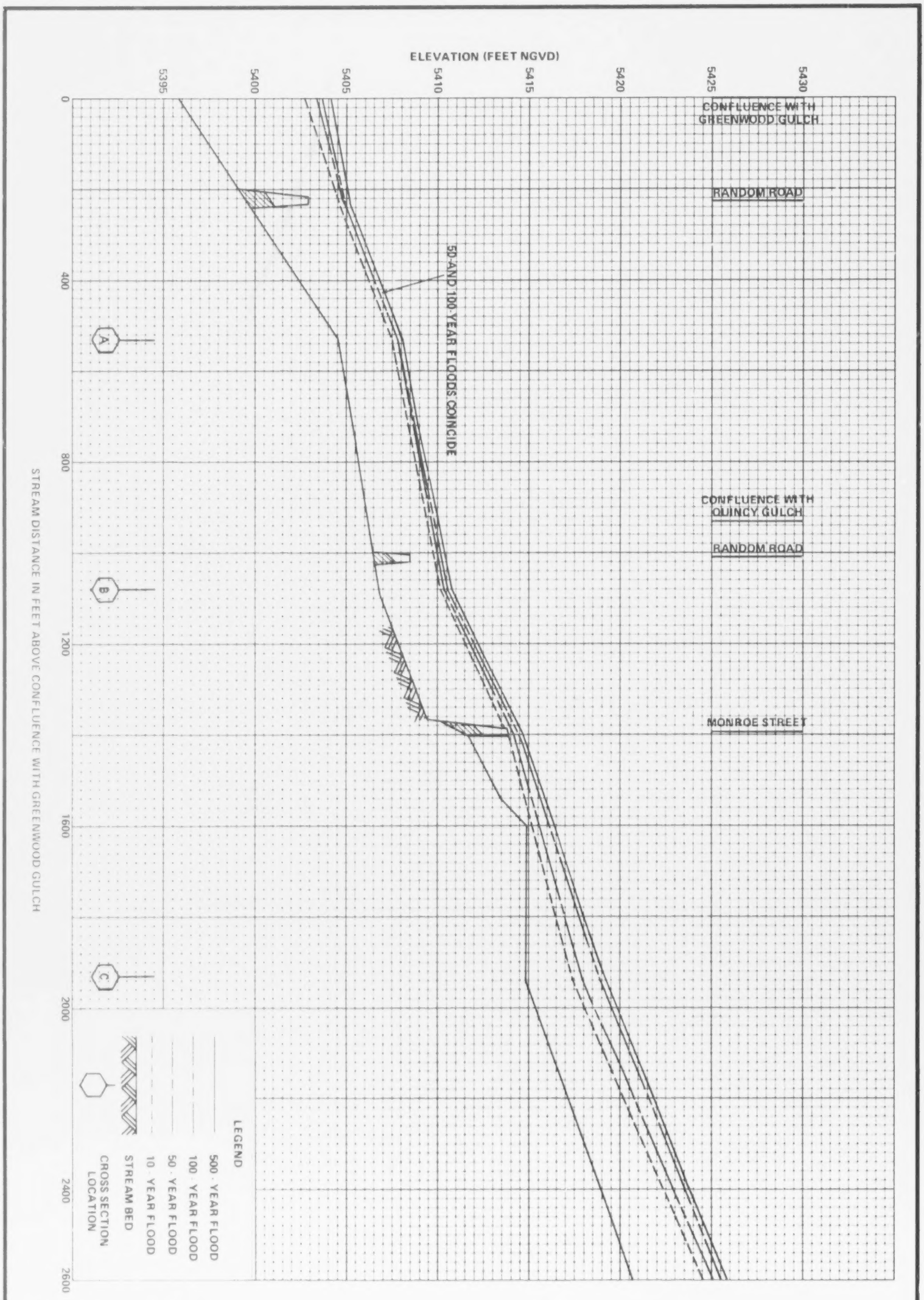
ARAPAHOE COUNTY, CO
AND INCORPORATED AREAS

16P


ELEVATION (FEET NGVD)
5580
5600
5620
5640
5660
2600
3000
3400
3800
4200
4600
5000
EAST JAMISON AVENUE
STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH BIG DRY CREEK
LEGEND
500 - YEAR FLOOD
100 - YEAR FLOOD
50 - YEAR FLOOD
10 - YEAR FLOOD
STREAM BED
CROSS SECTION LOCATION



18P	FEDERAL EMERGENCY MANAGEMENT AGENCY ARAPAHOE COUNTY, CO AND INCORPORATED AREAS	**FLOOD PROFILES** BIG DRY CREEK TRIBUTARY A



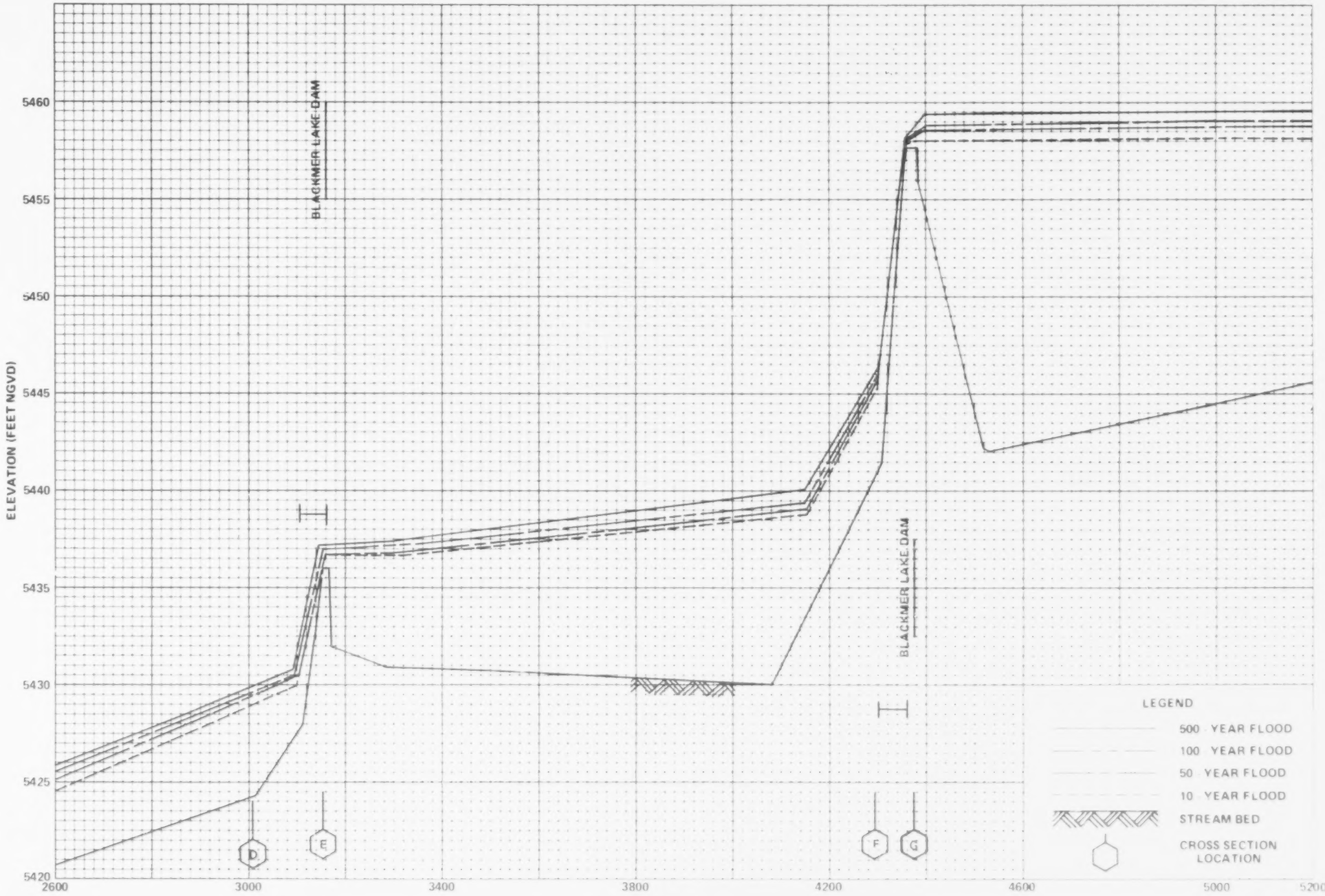
19P

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
AND INCORPORATED AREAS

FLOOD PROFILES

BLACKMER GULCH



FLOOD PROFILES

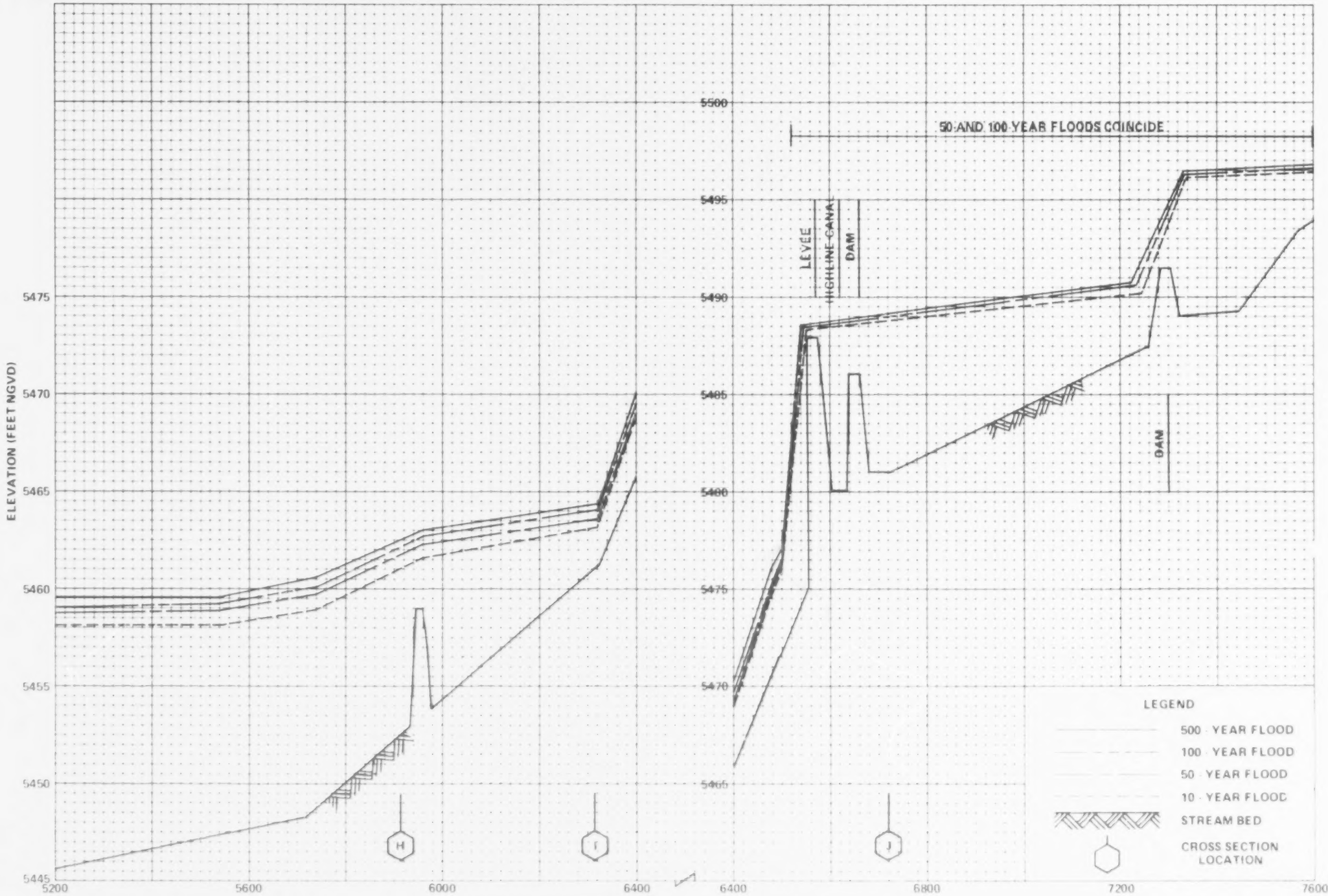
BLACKMER GULCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO.
AND INCORPORATED AREAS

20P

88178



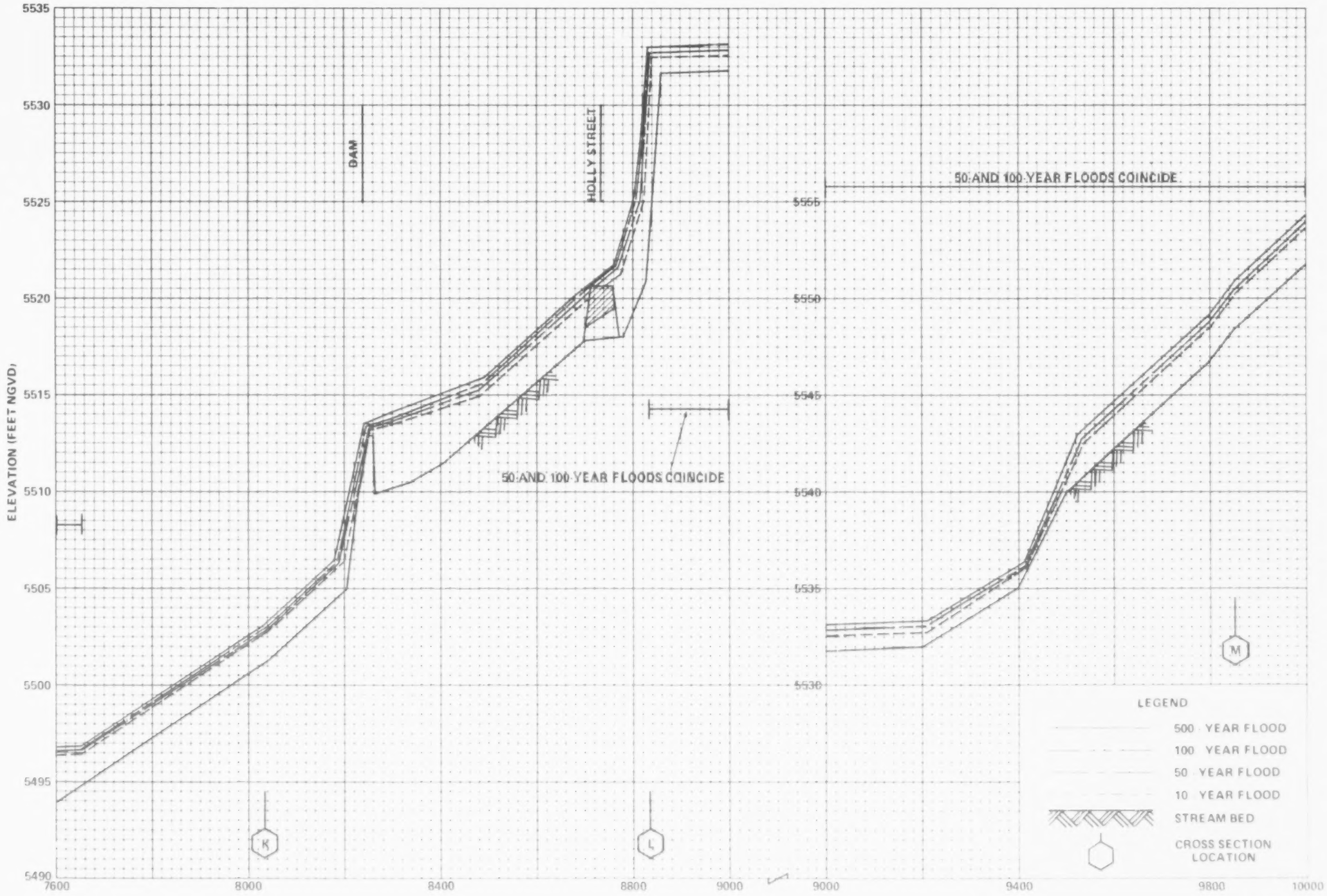
FLOOD PROFILES

BLACKMER GULCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
AND INCORPORATED AREAS

21P



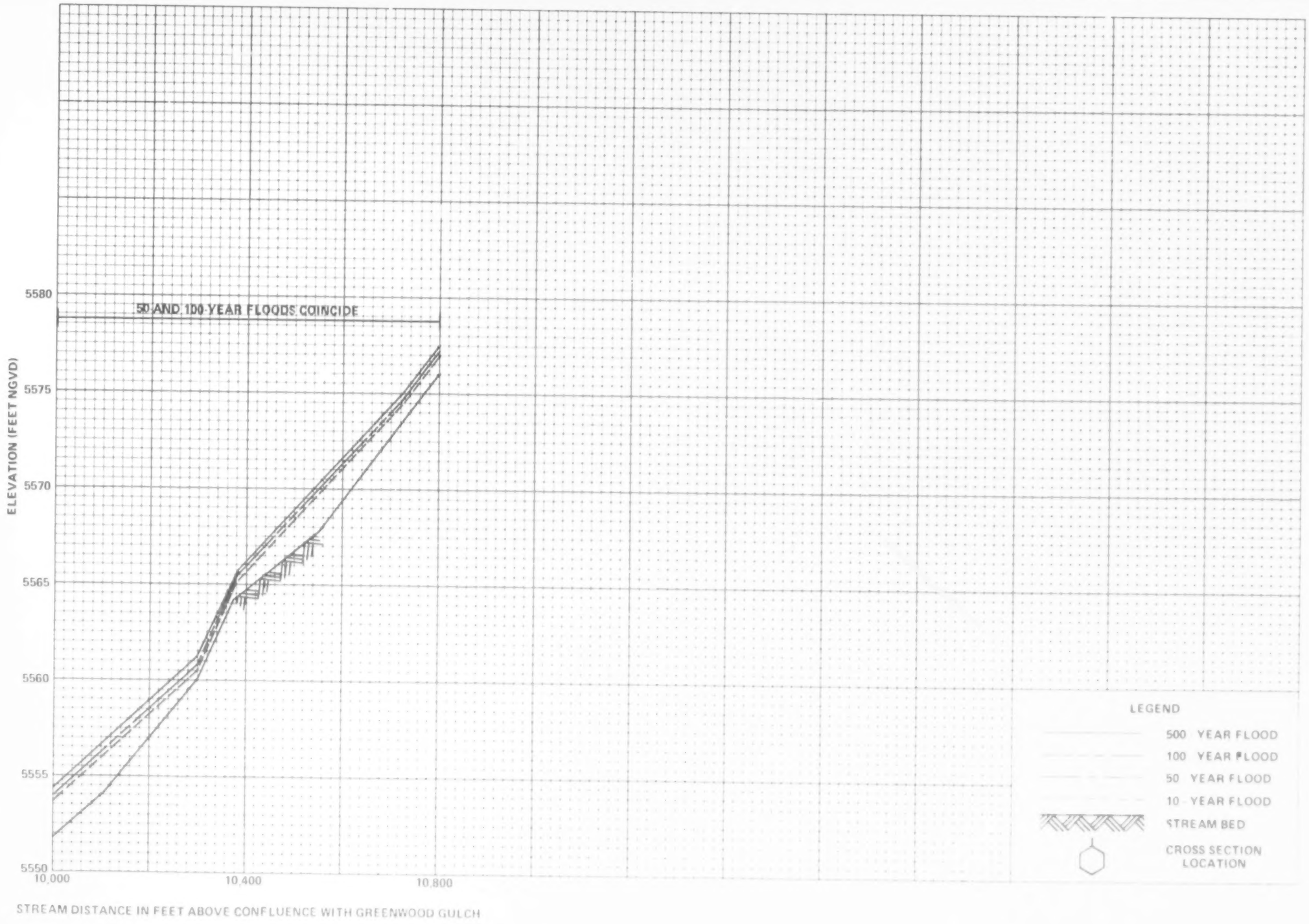
FLOOD PROFILES

BLACKMER GULCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
AND INCORPORATED AREAS

22P



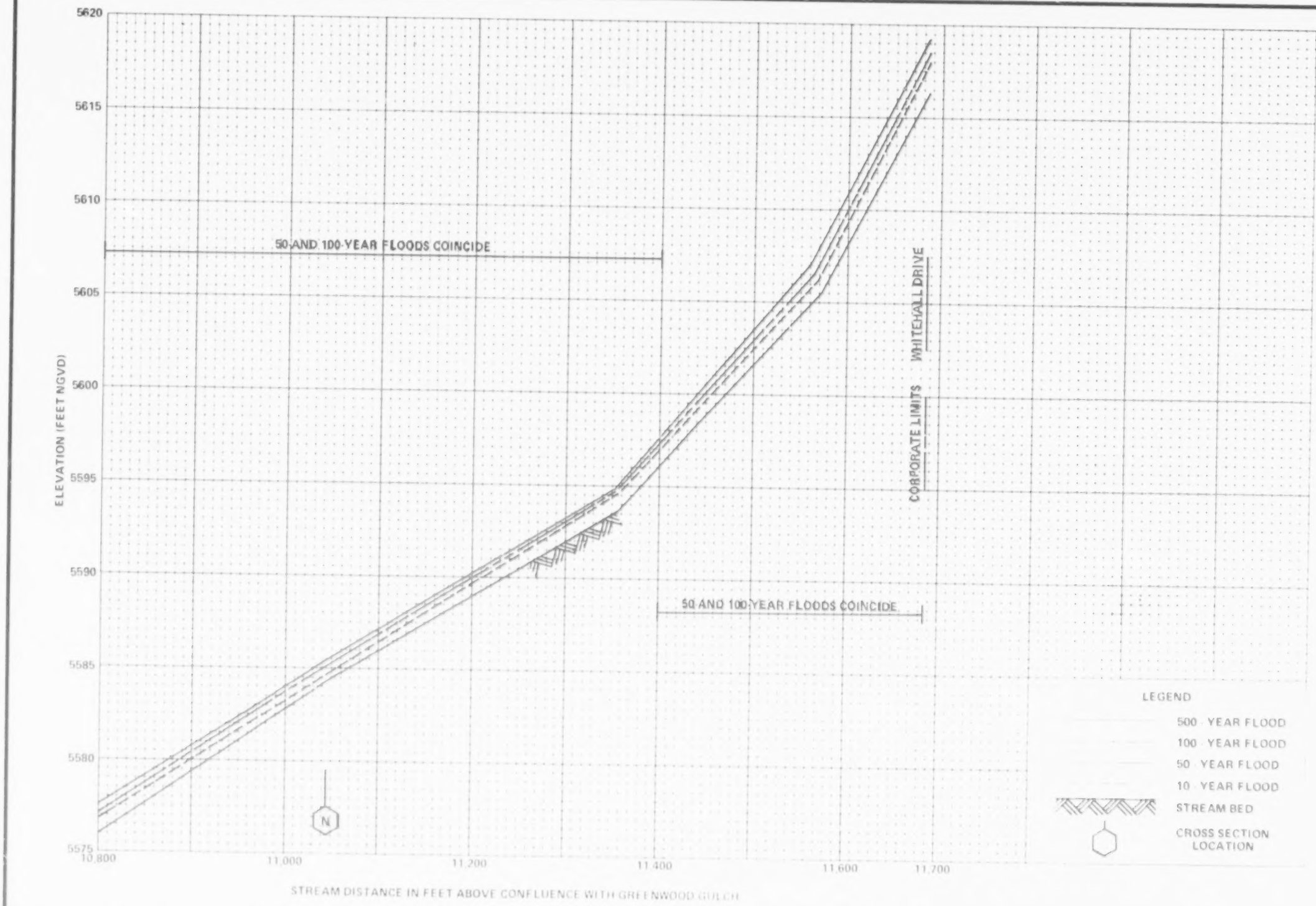
FLOOD PROFILES

BLACKMER GULCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
AND INCORPORATED AREAS

23P



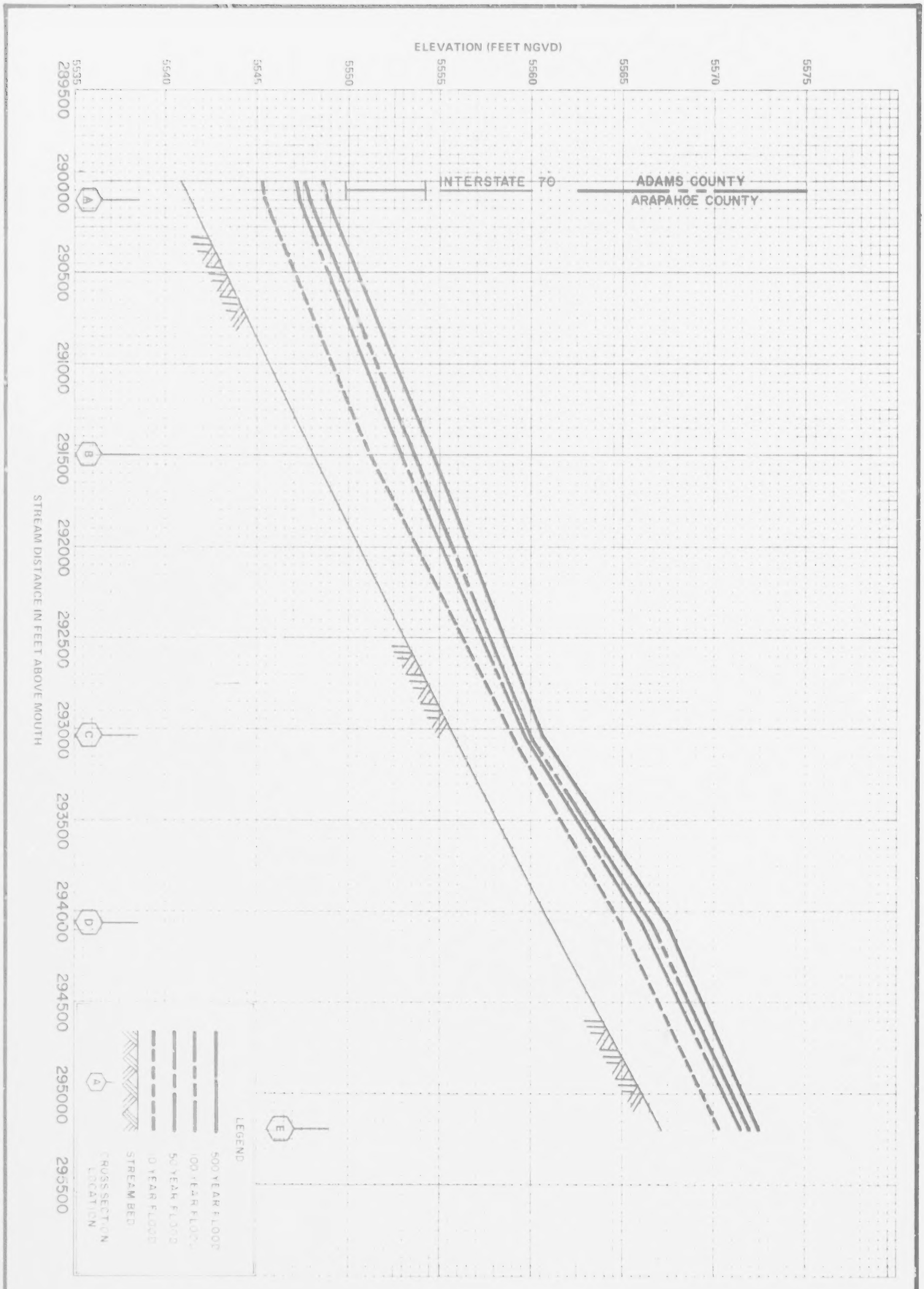
FLOOD PROFILES

BLACKMER GULCH

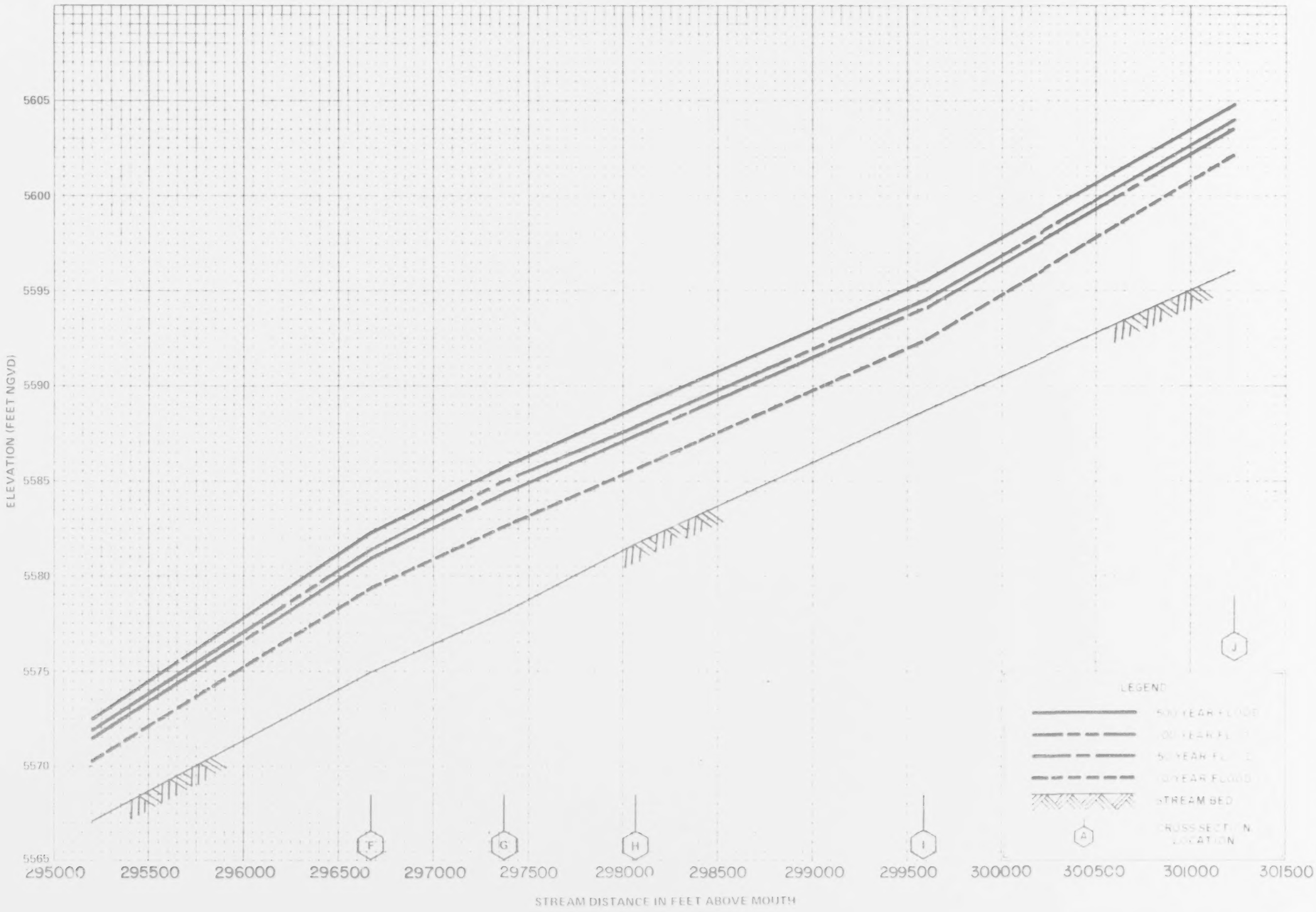
FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO.
AND INCORPORATED AREAS

24P



25P	FEDERAL EMERGENCY MANAGEMENT AGENCY ARAPAHOE COUNTY, CO AND INCORPORATED AREAS	FLOOD PROFILES BOX ELDER CREEK



FLOOD PROFILES

BOX ELDER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
AND INCORPORATED AREAS

26P

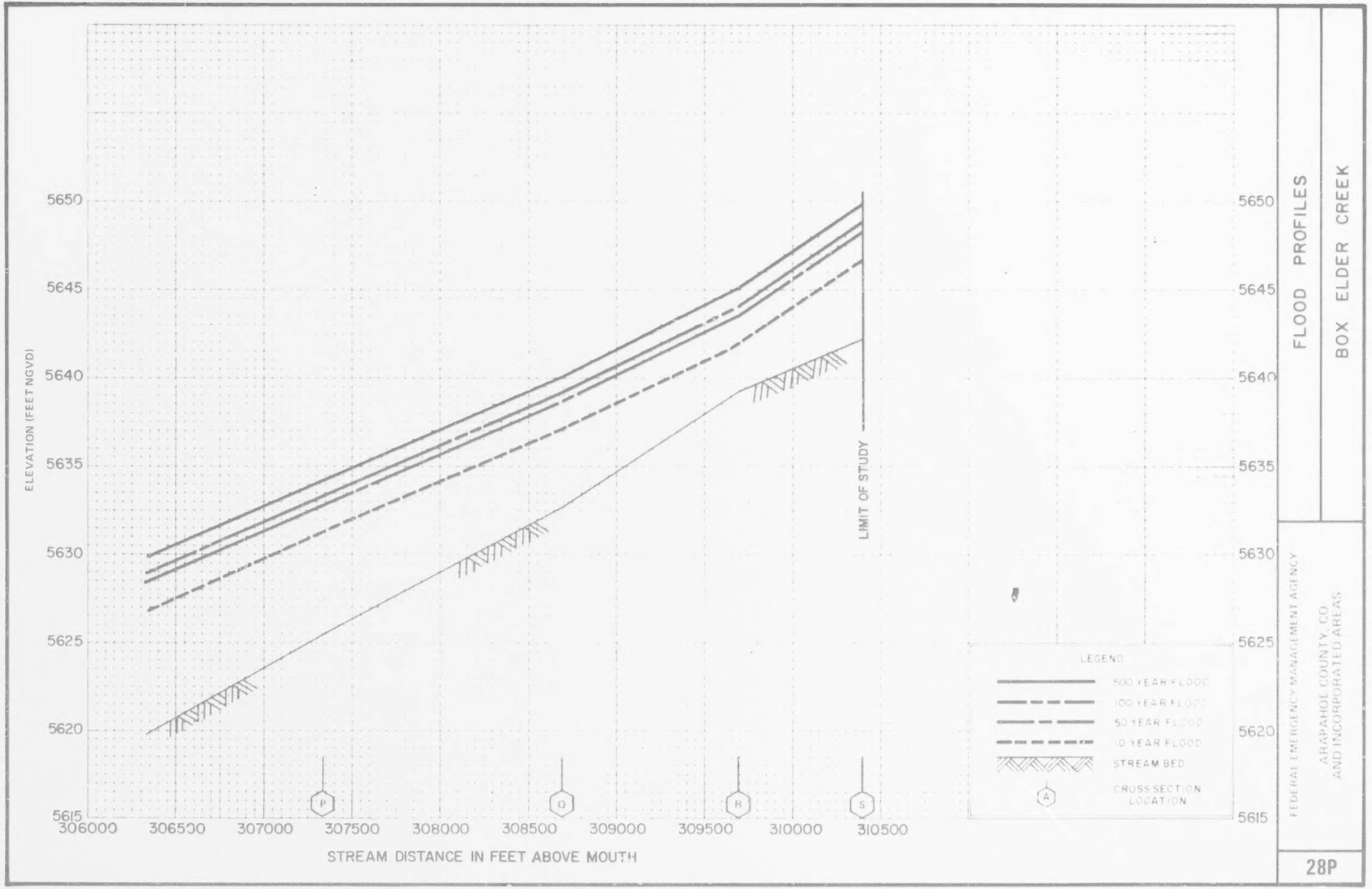
FLOOD PROFILES

BOX ELDER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
AND INCORPORATED AREAS

27P



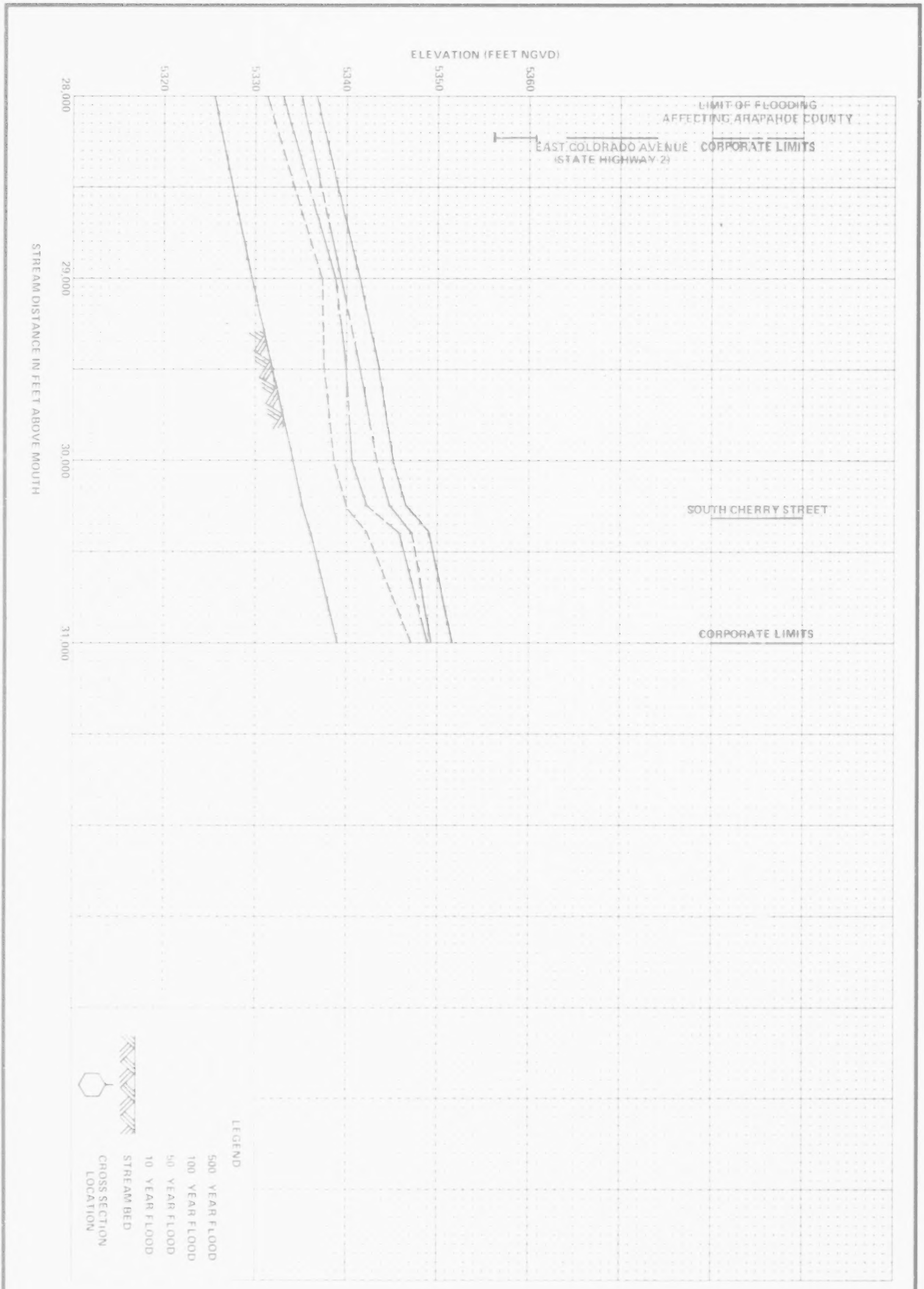
FLOOD PROFILES

BOX ELDER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
AND INCORPORATED AREAS

28P



101

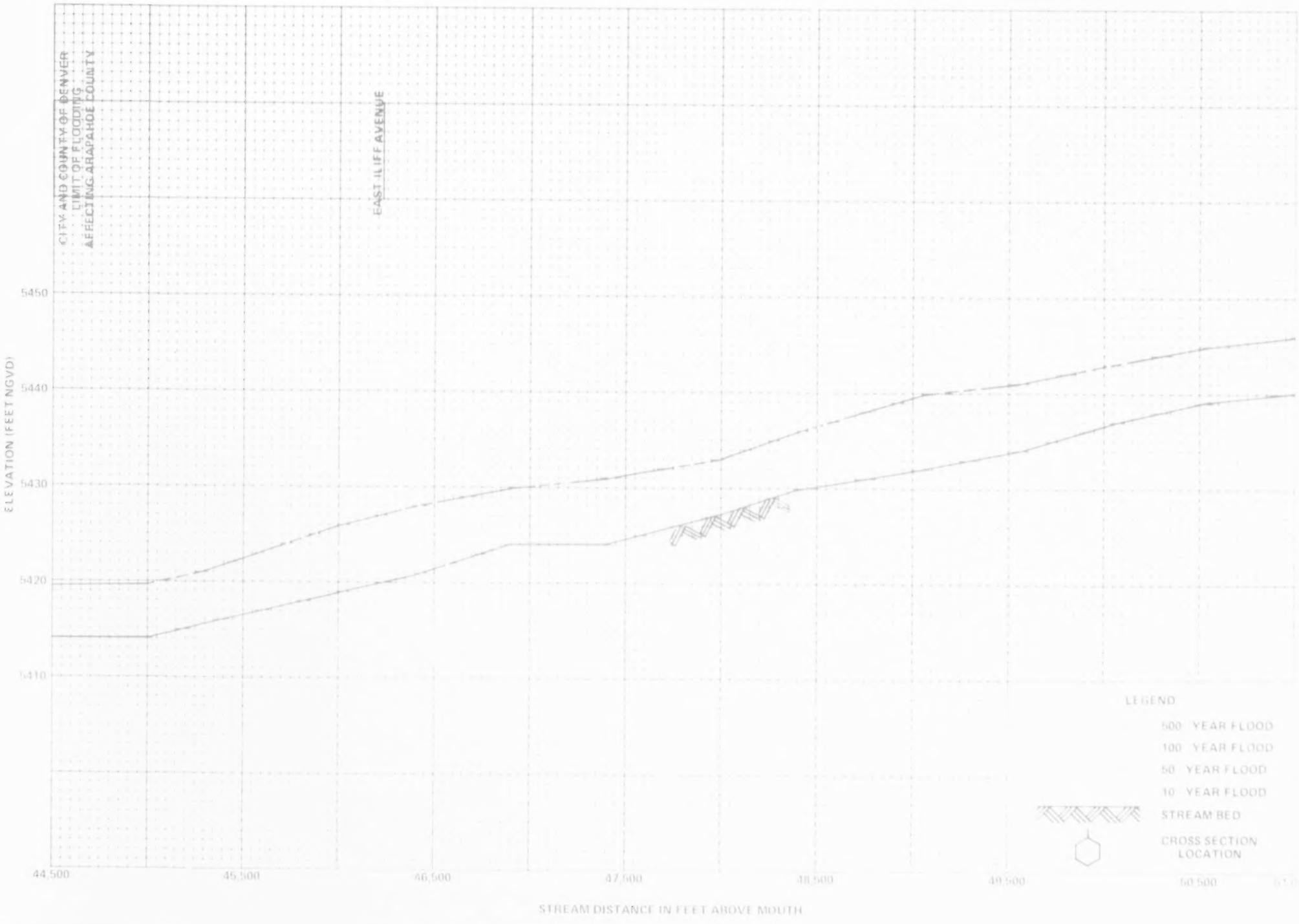
29P

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
AND INCORPORATED AREAS

FLOOD PROFILES

CHERRY CREEK



FLOOD PROFILES

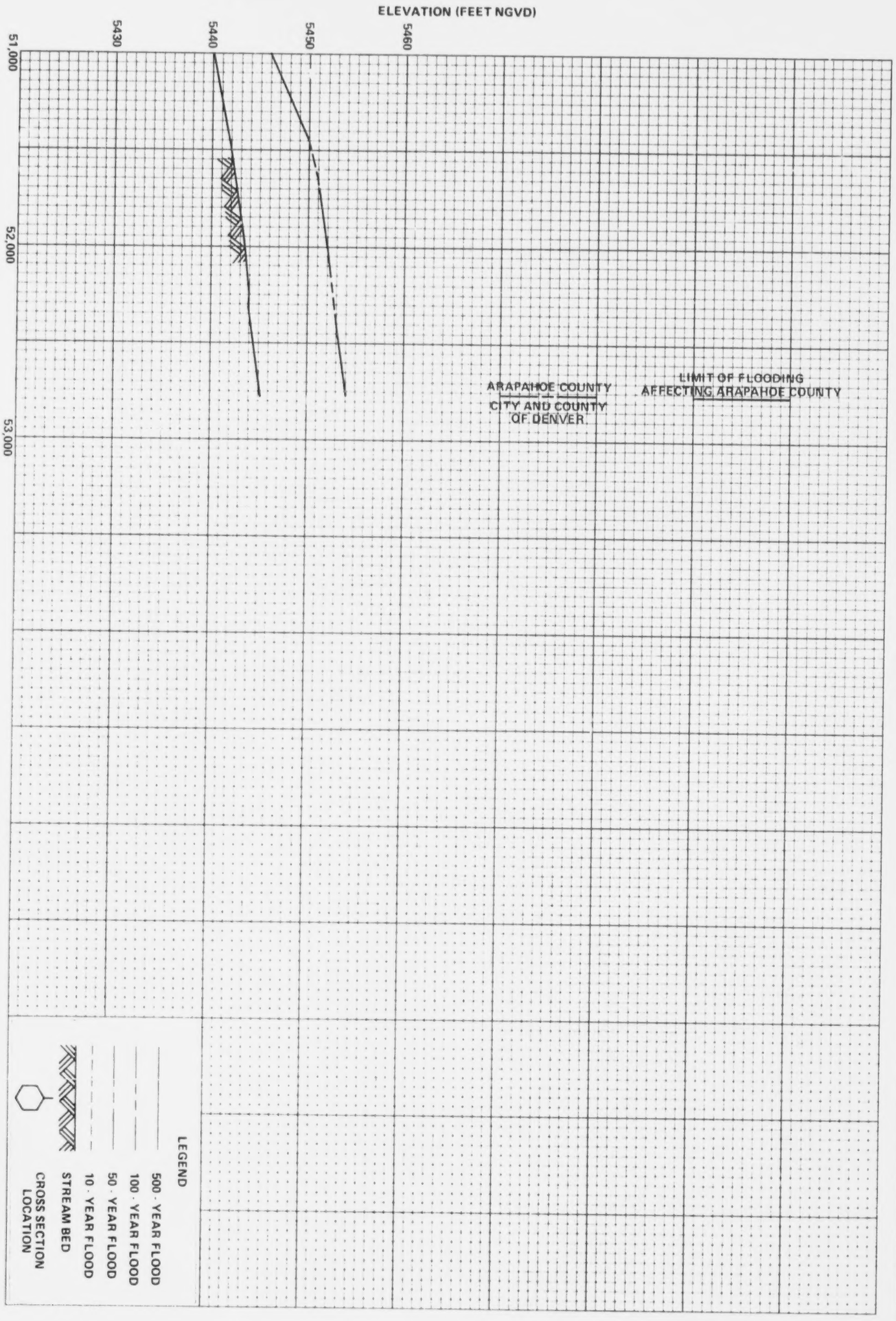
CHERRY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

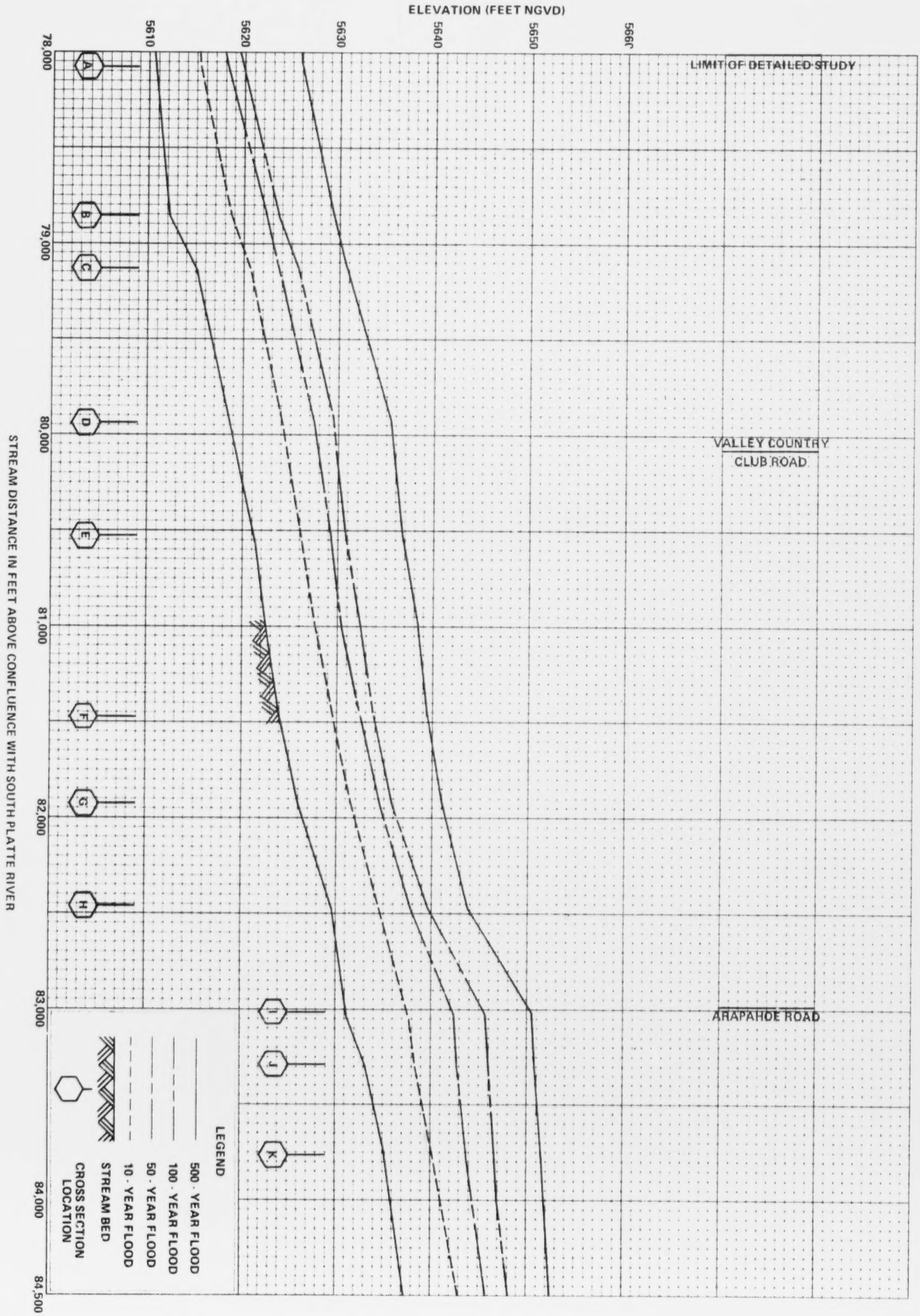
ARAPAHOE COUNTY, CO.
AND INCORPORATED AREAS

30P

88179

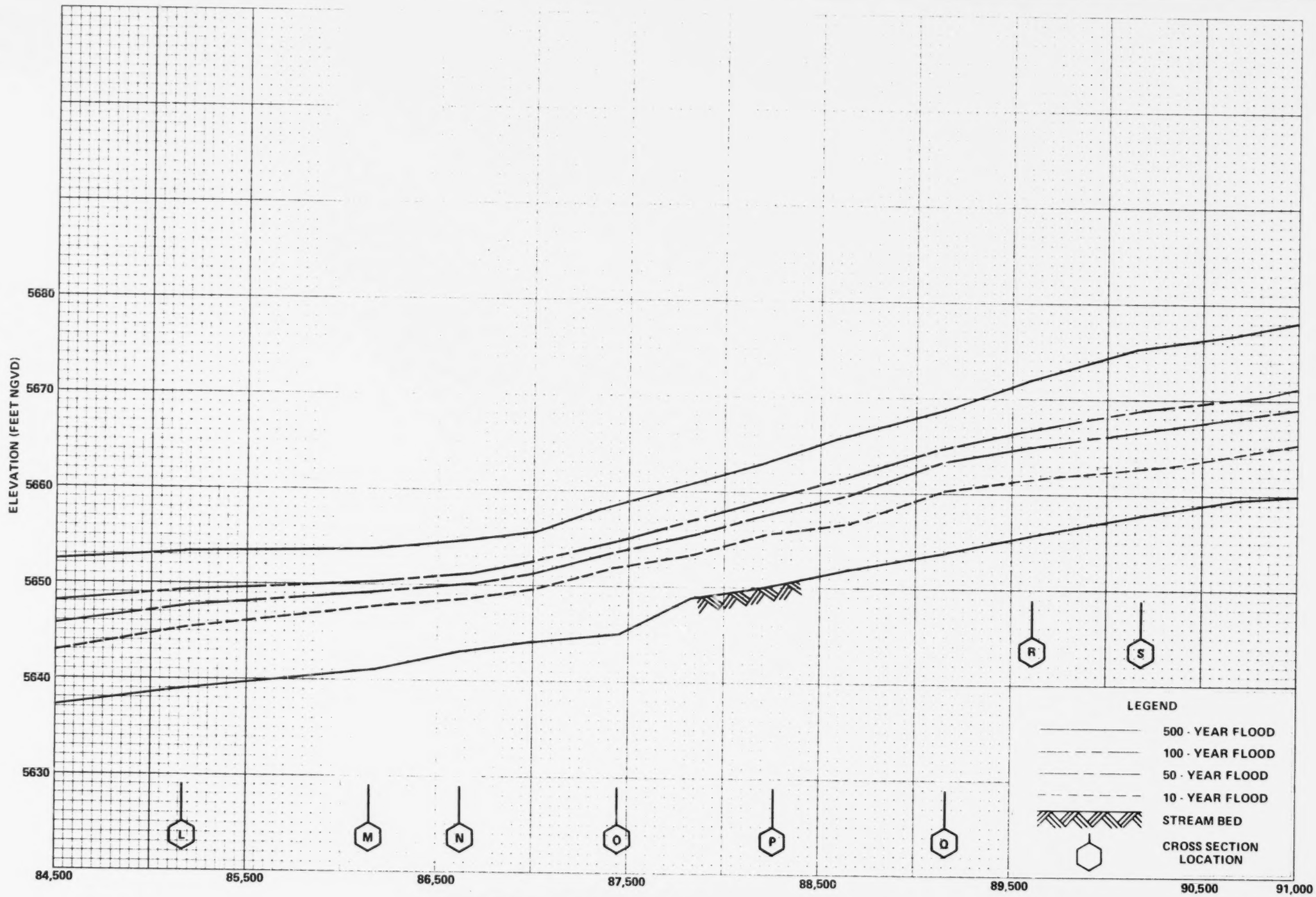


31P	FEDERAL EMERGENCY MANAGEMENT AGENCY ARAPAHOE COUNTY, CO AND INCORPORATED AREAS	FLOOD PROFILES CHERRY CREEK



32P	FEDERAL EMERGENCY MANAGEMENT AGENCY ARAPAHOE COUNTY, CO AND INCORPORATED AREAS	FLOOD PROFILES CHERRY CREEK

104



FLOOD PROFILES

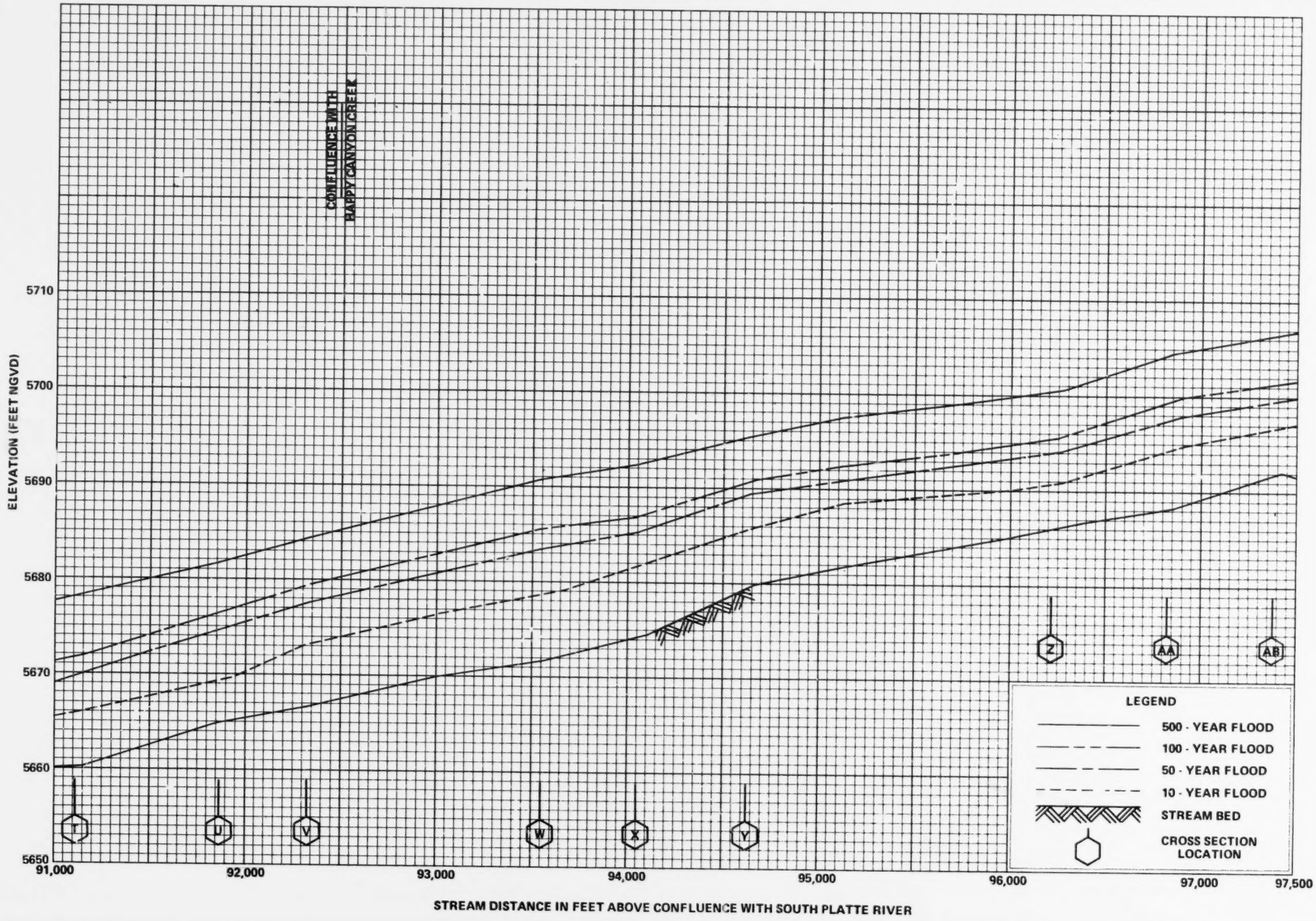
CHERRY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
AND INCORPORATED AREAS

33P

85179



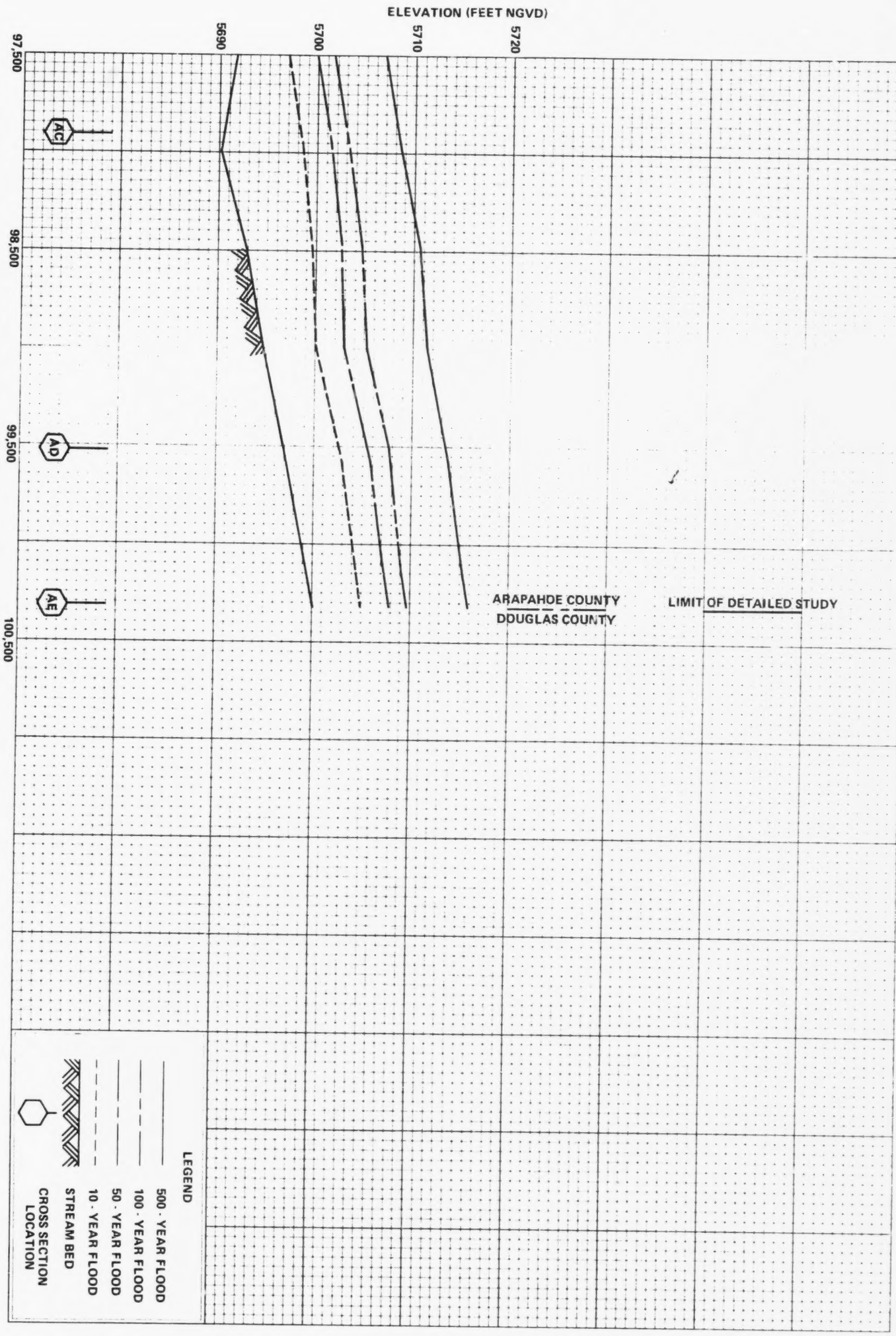
FLOOD PROFILES

CHERRY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
AND INCORPORATED AREAS

34P



107

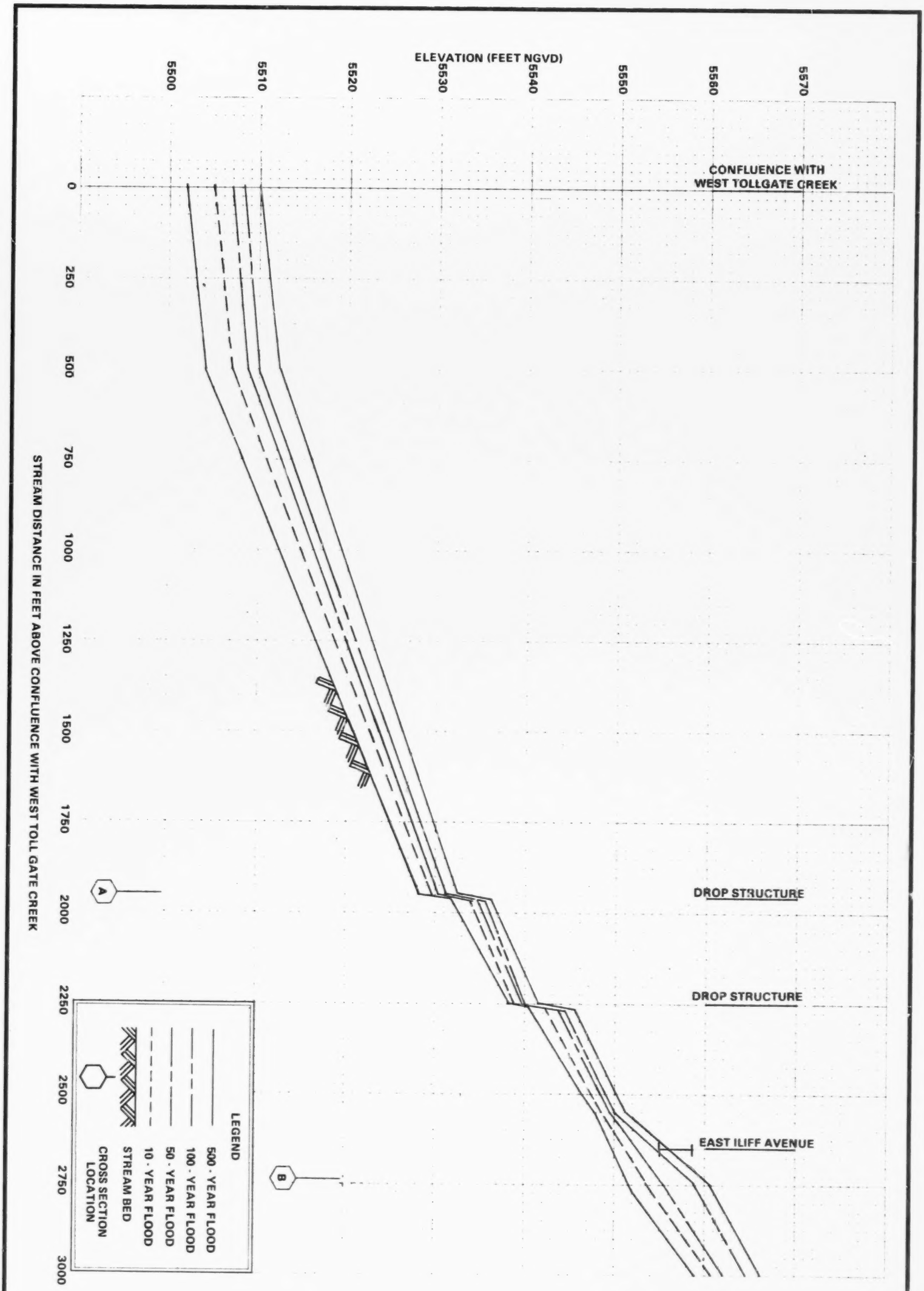
35P

FEDERAL EMERGENCY MANAGEMENT AGENCY

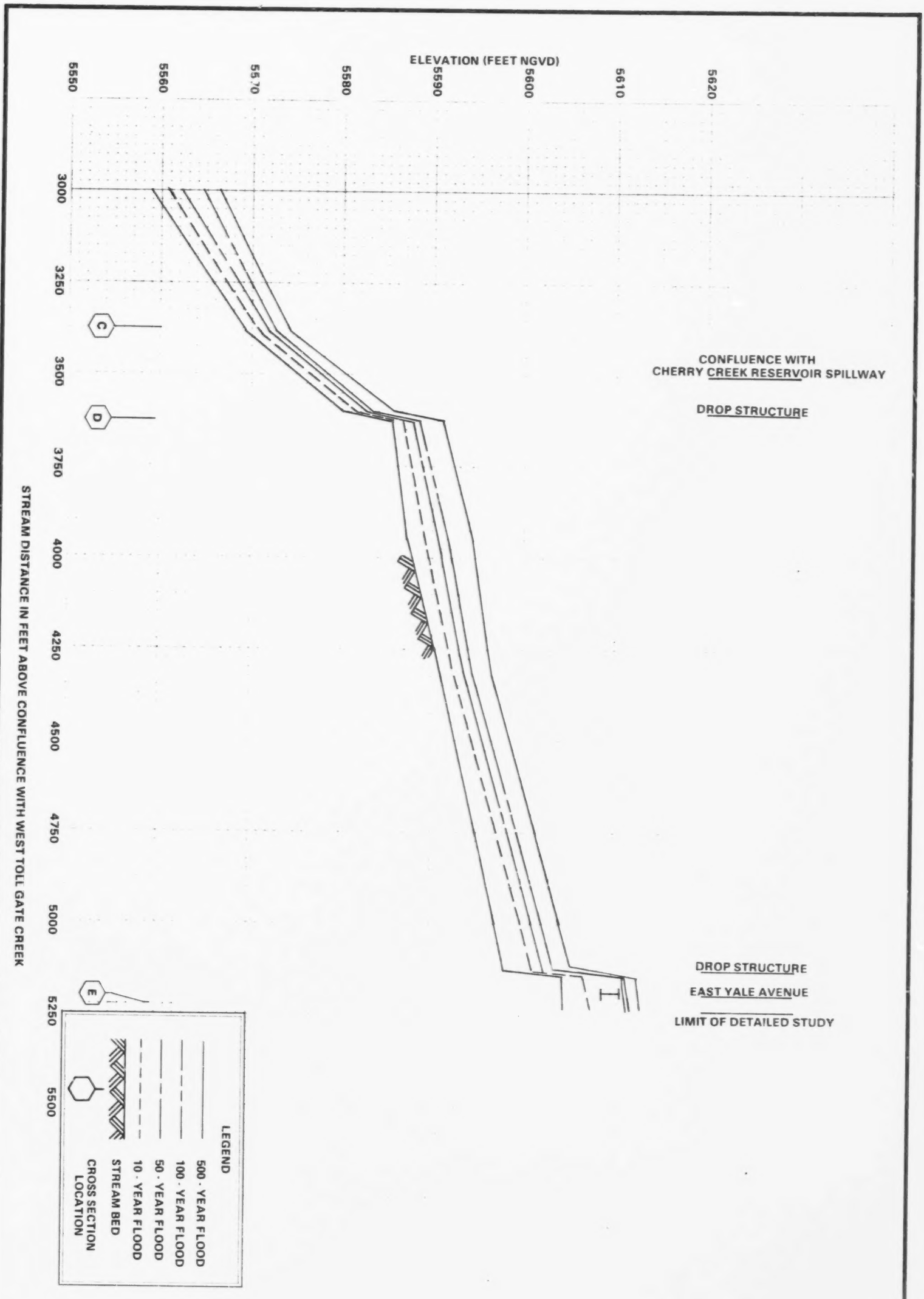
ARAPAHOE COUNTY, CO
AND INCORPORATED AREAS

FLOOD PROFILES

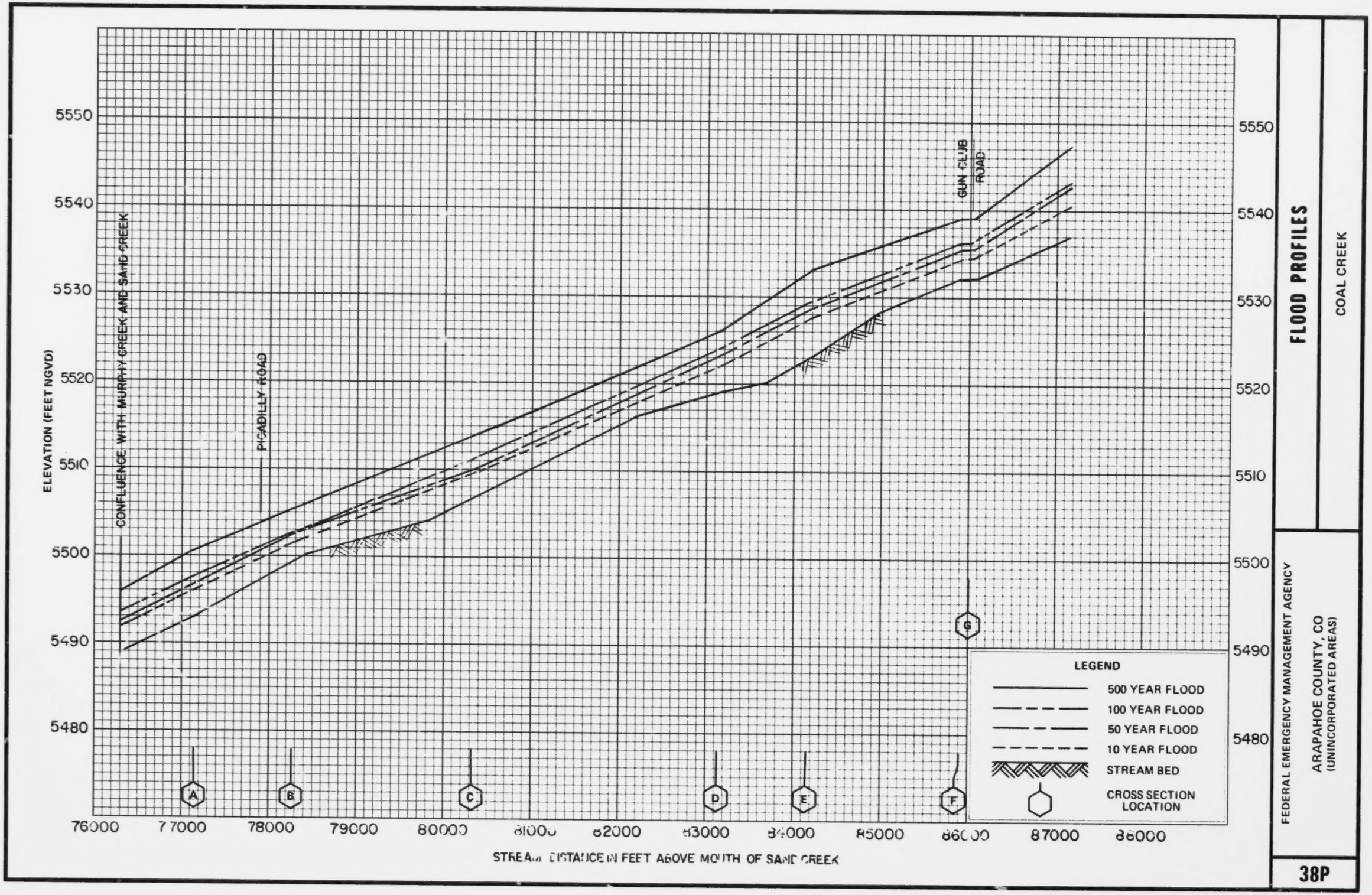
CHERRY CREEK



36P	FEDERAL EMERGENCY MANAGEMENT AGENCY ARAPAHOE COUNTY, CO AND INCORPORATED AREAS	FLOOD PROFILES CHERRY CREEK SPILLWAY DRAIN



37P	FEDERAL EMERGENCY MANAGEMENT AGENCY ARAPAHOE COUNTY, CO AND INCORPORATED AREAS	FLOOD PROFILES CHERRY CREEK SPILLWAY DRAIN



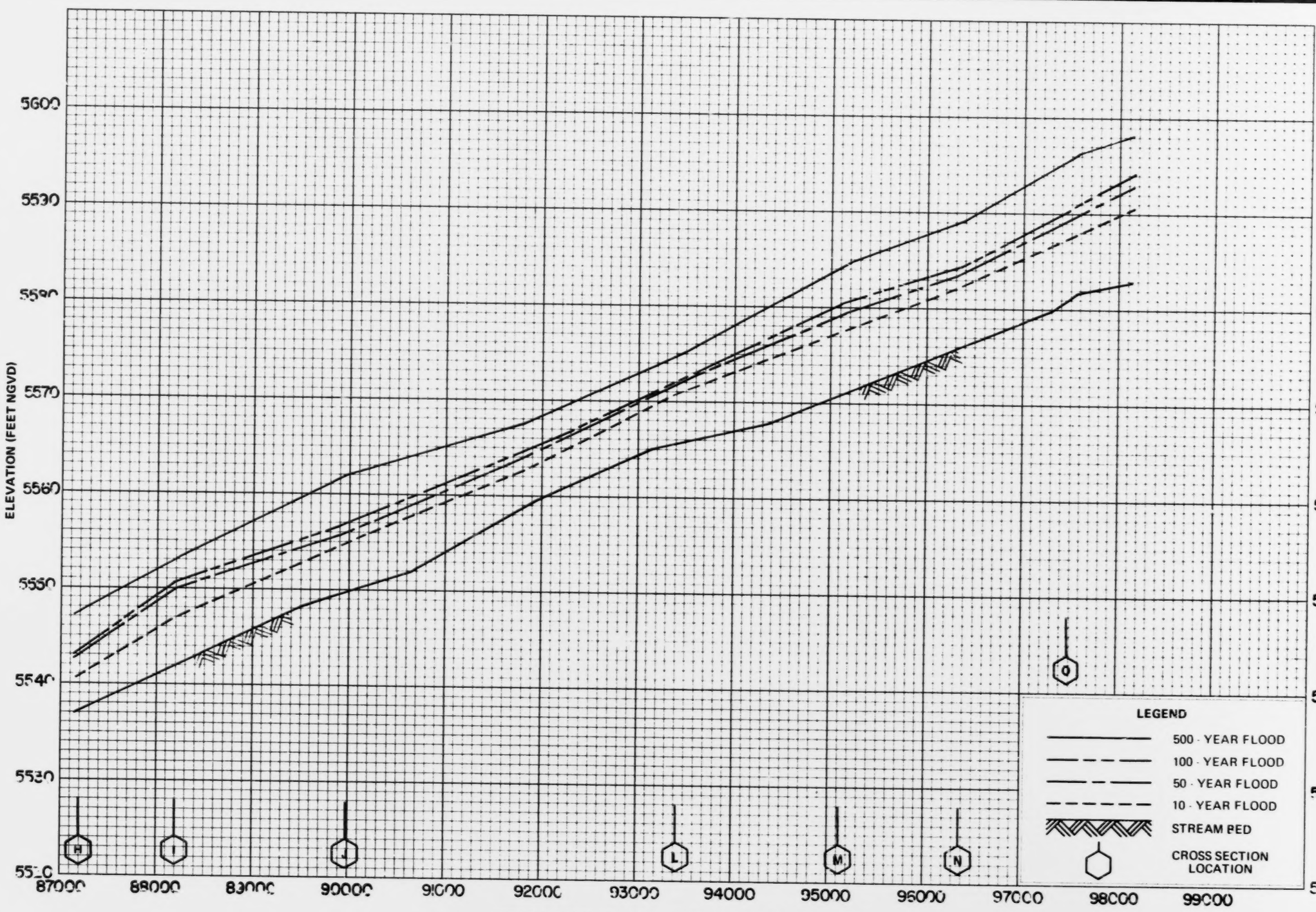
FLOOD PROFILES

COAL CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
(UNINCORPORATED AREAS)

38P



FLOOD PROFILES

COAL CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
(UNINCORPORATED AREAS)

39P

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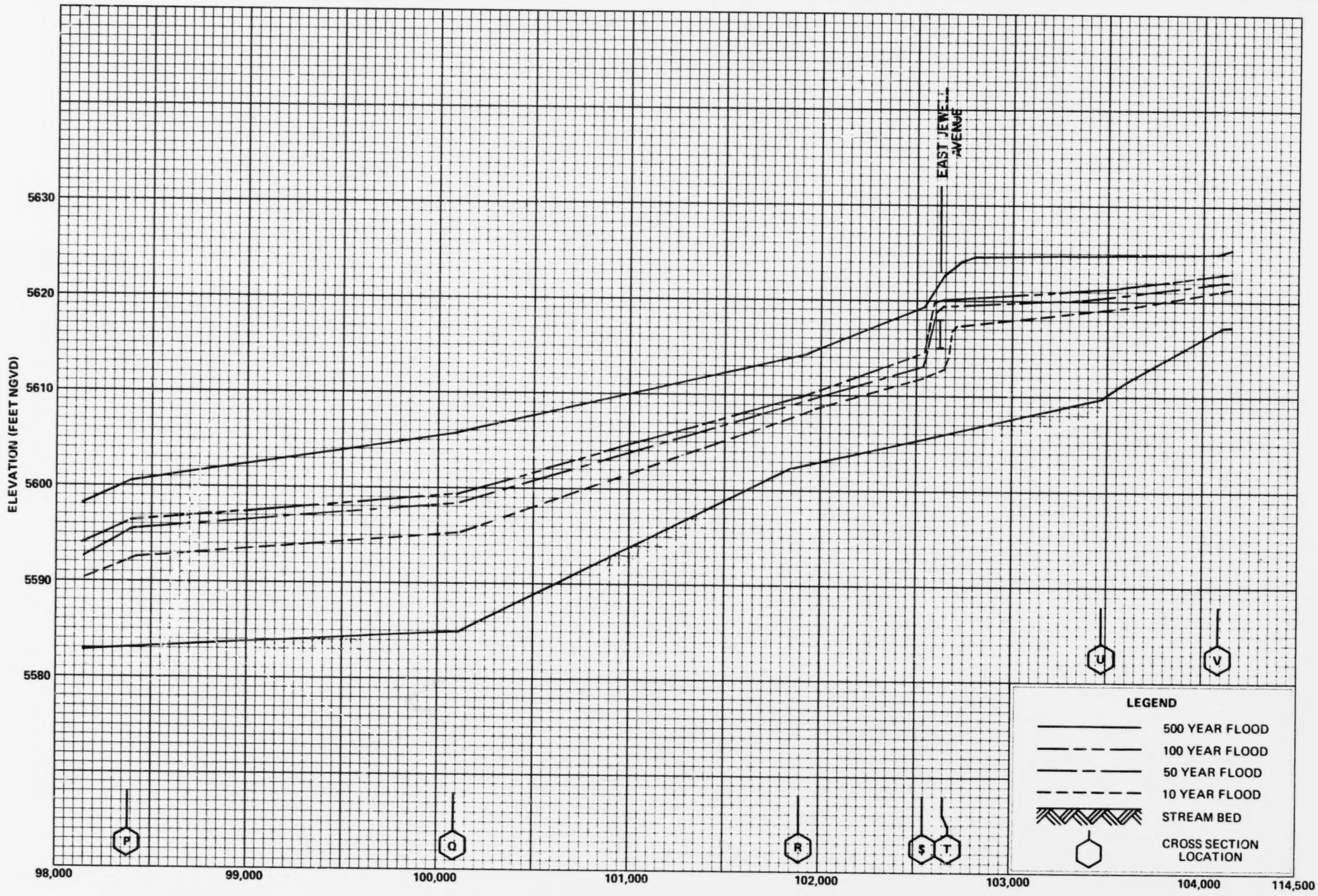


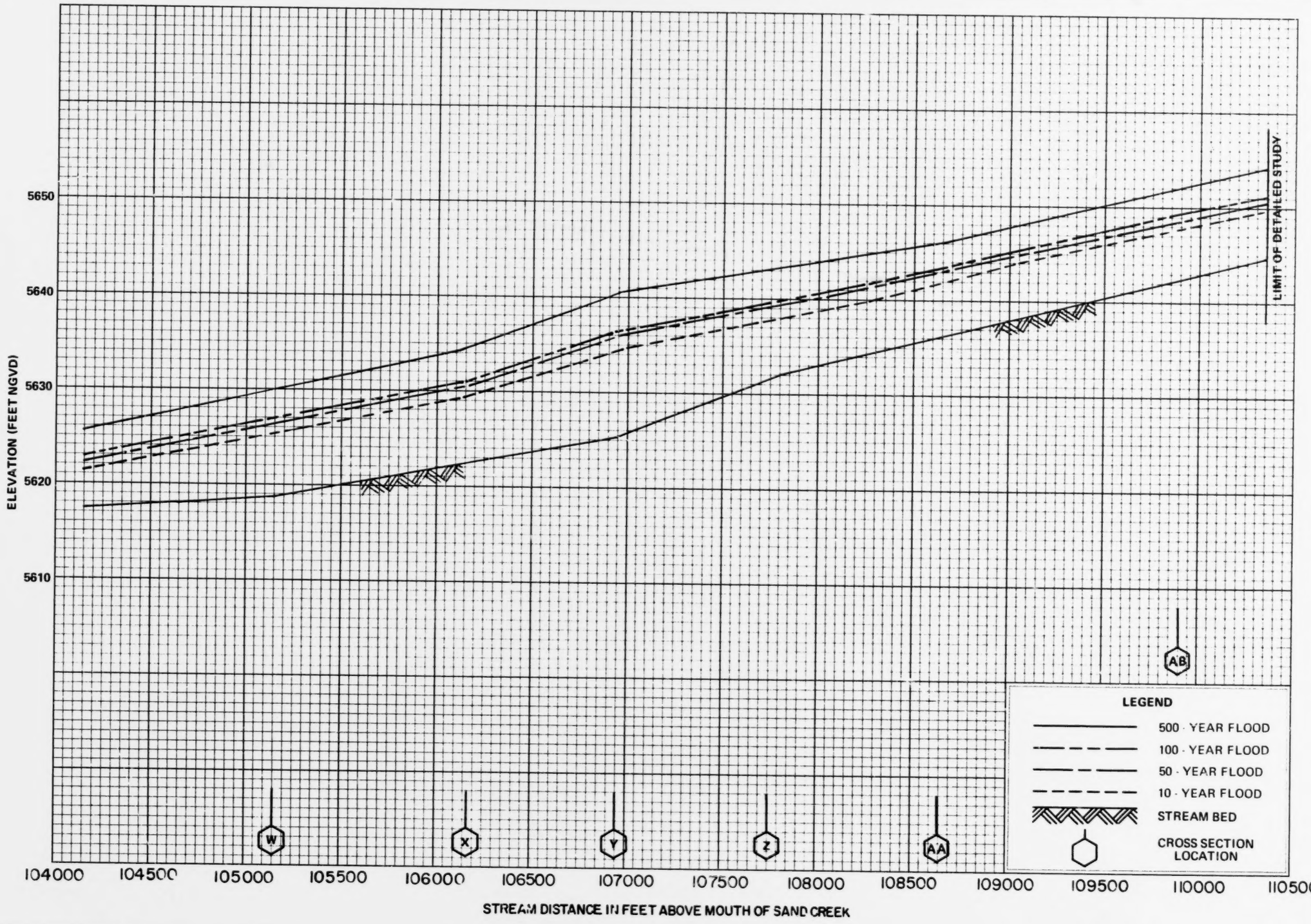
FLOOD PROFILES

COAL CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
(UNINCORPORATED AREAS)

40P



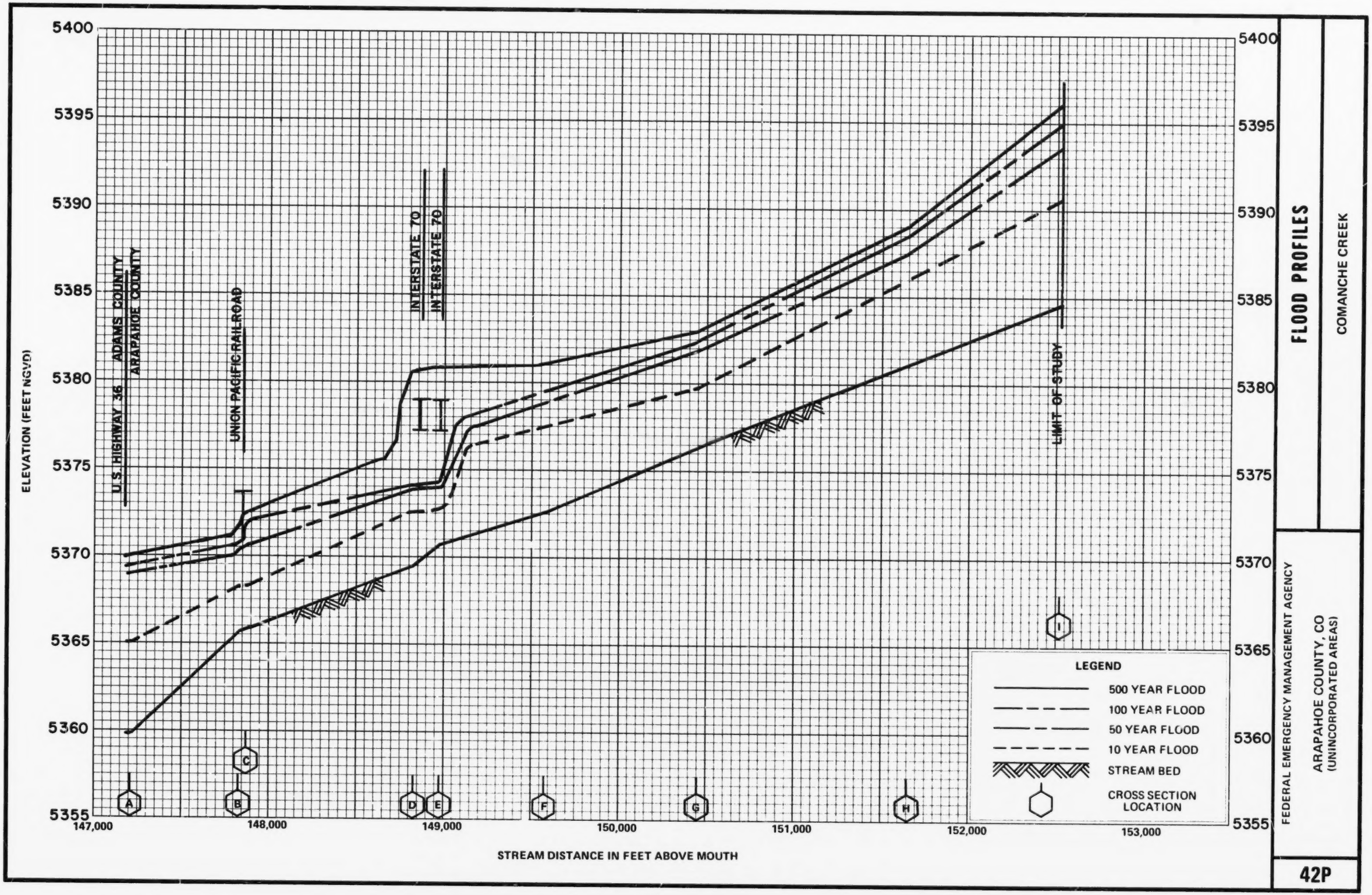
FLOOD PROFILES

COAL CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
(UNINCORPORATED AREAS)

41P



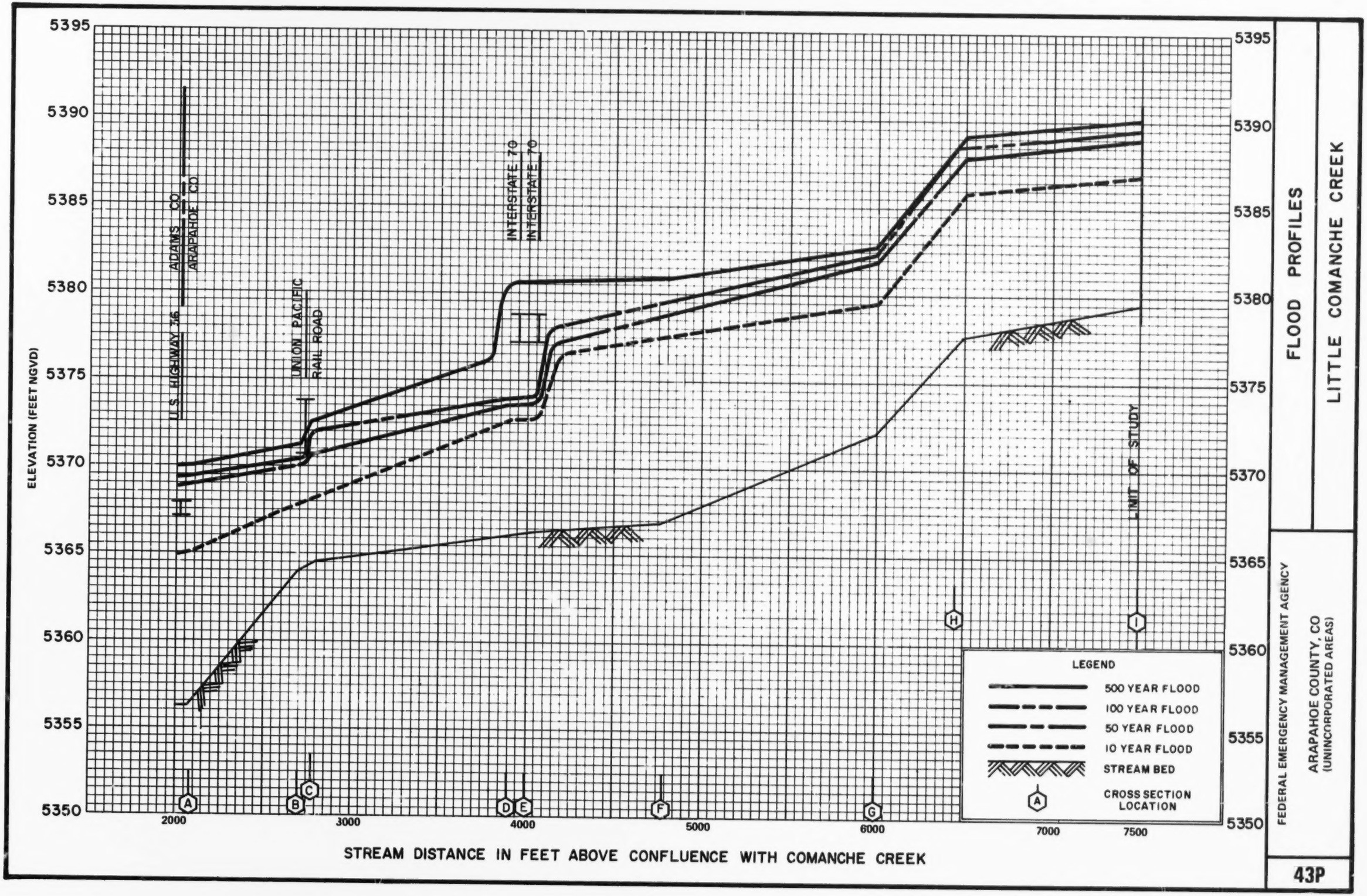
FLOOD PROFILES

COMANCHE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
(UNINCORPORATED AREAS)

42P



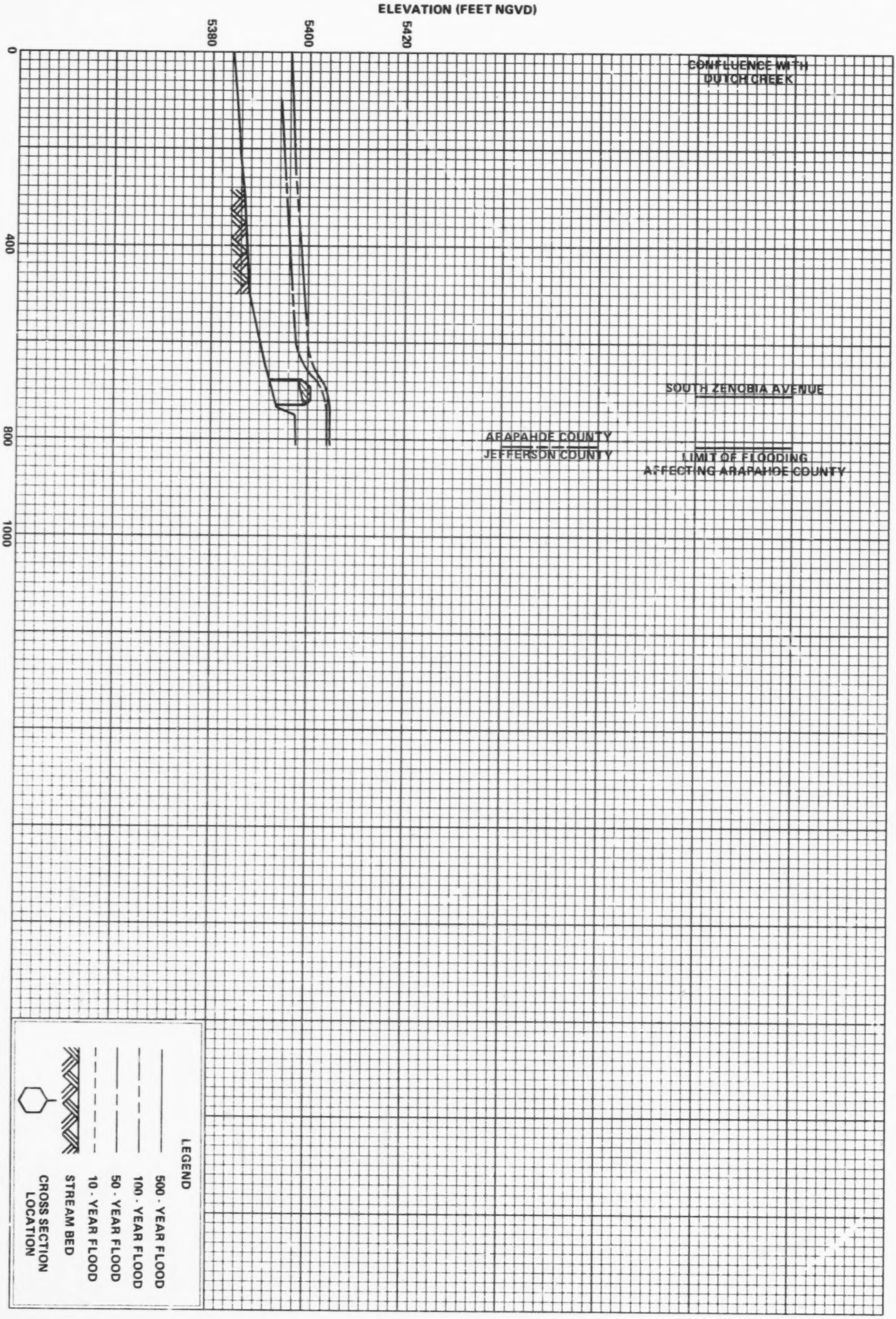
FLOOD PROFILES

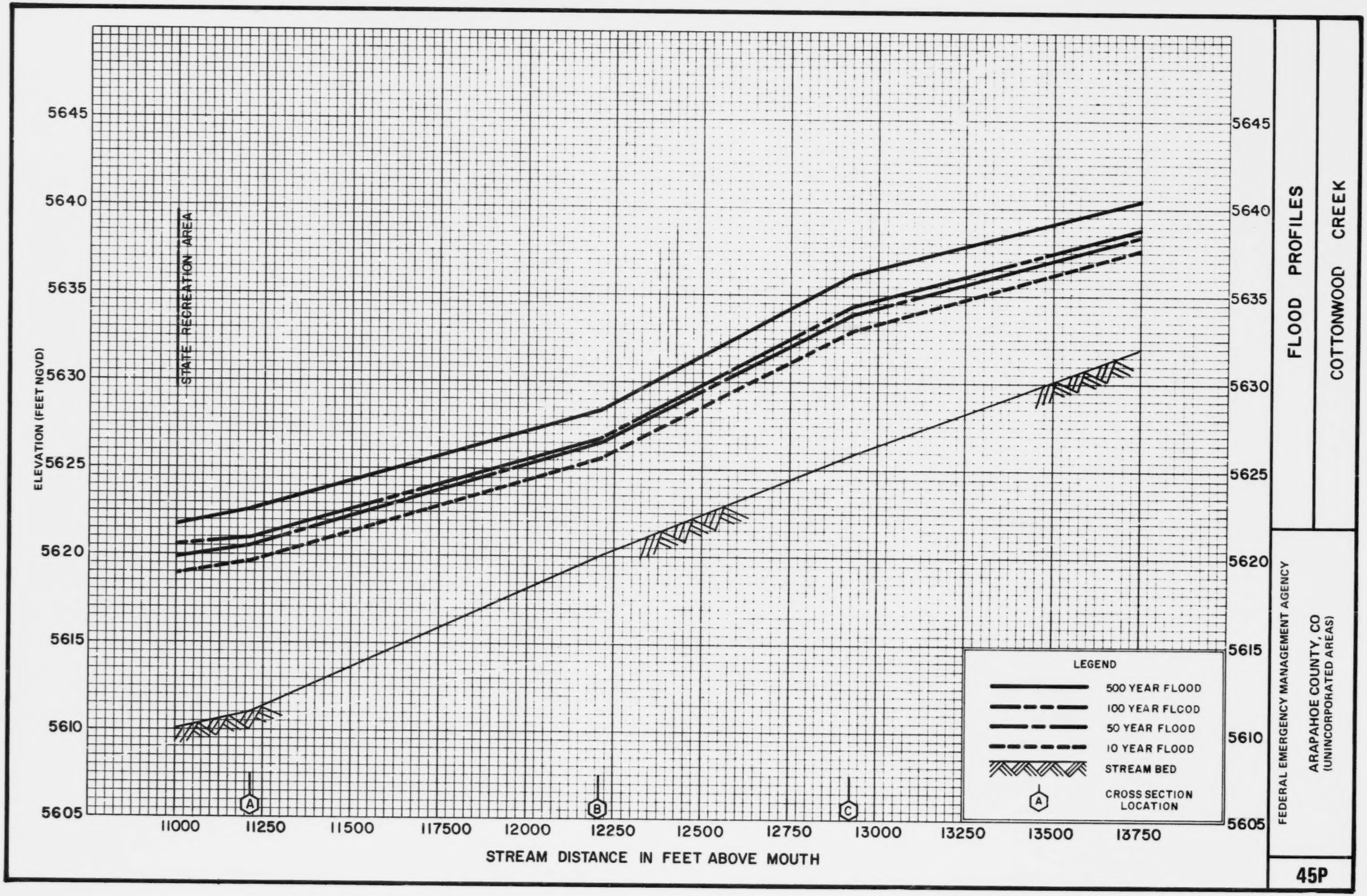
LITTLE COMANCHE CREEK

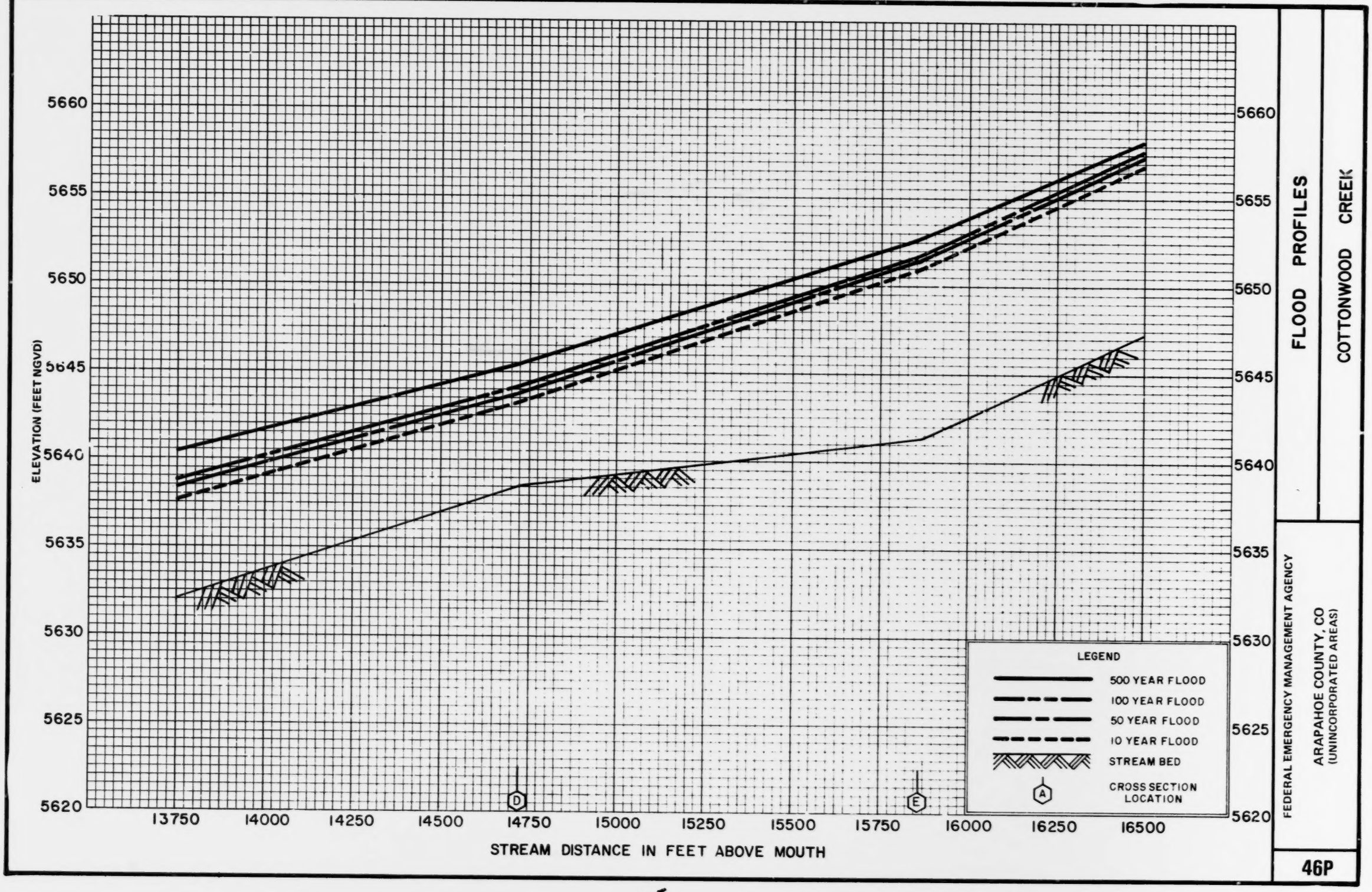
FEDERAL EMERGENCY MANAGEMENT AGENCY

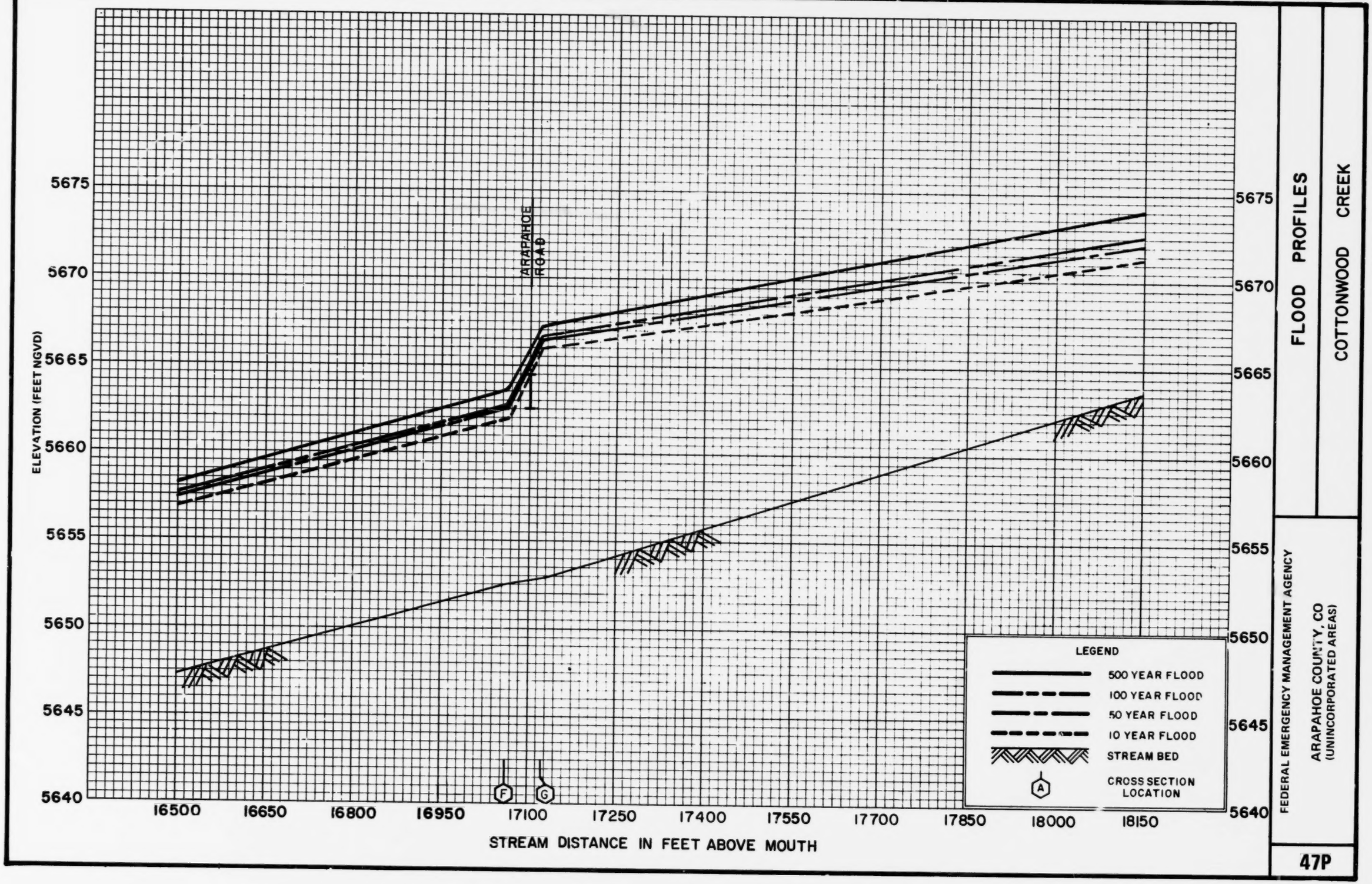
ARAPAHOE COUNTY, CO
(UNINCORPORATED AREAS)

43P


ELEVATION (FEET NGVD)
5380
5400
5420
0
400
800
1000
STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH DUTCH CREEK
CONFLUENCE WITH DUTCH CREEK
SOUTH ZENOBIA AVENUE
ARAPAHOE COUNTY
JEFFERSON COUNTY
LIMIT OF FLOODING AFFECTING ARAPAHOE COUNTY
LEGEND
500 - YEAR FLOOD
100 - YEAR FLOOD
50 - YEAR FLOOD
10 - YEAR FLOOD
STREAM BED
CROSS SECTION LOCATION


5645
5640
5635
5630
5625
5620
5615
5610
5605
ELEVATION (FEET NGVD)
STATE RECREATION AREA
11000
11250
11500
117500
12000
12250
12500
12750
13000
13250
13500
13750
STREAM DISTANCE IN FEET ABOVE MOUTH
A
B
C
LEGEND
500 YEAR FLOOD
100 YEAR FLOOD
50 YEAR FLOOD
10 YEAR FLOOD
STREAM BED
CROSS SECTION LOCATION
FLOOD PROFILES
COTTONWOOD CREEK
FEDERAL EMERGENCY MANAGEMENT AGENCY
ARAPAHOE COUNTY, CO
(UNINCORPORATED AREAS)
45P


ELEVATION (FEET NGVD)
5660
5655
5650
5645
5640
5635
5630
5625
5620
13750
14000
14250
14500
14750
15000
15250
15500
15750
16000
16250
16500
STREAM DISTANCE IN FEET ABOVE MOUTH
D
E
LEGEND
500 YEAR FLOOD
100 YEAR FLOOD
50 YEAR FLOOD
10 YEAR FLOOD
STREAM BED
A
CROSS SECTION LOCATION
FLOOD PROFILES
COTTONWOOD CREEK
FEDERAL EMERGENCY MANAGEMENT AGENCY
ARAPAHOE COUNTY, CO
(UNINCORPORATED AREAS)
46P



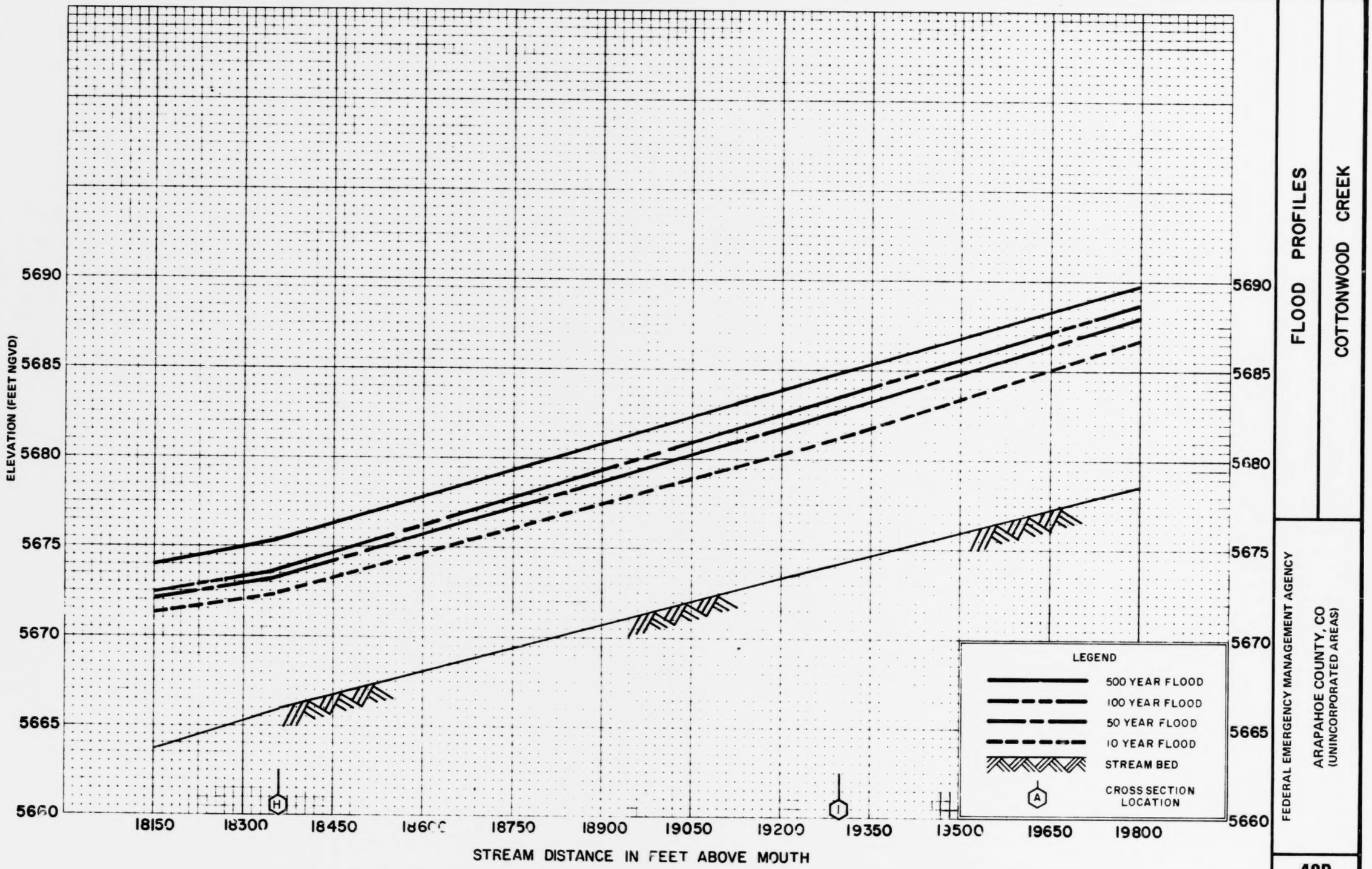
FLOOD PROFILES

COTTONWOOD CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
(UNINCORPORATED AREAS)

47P



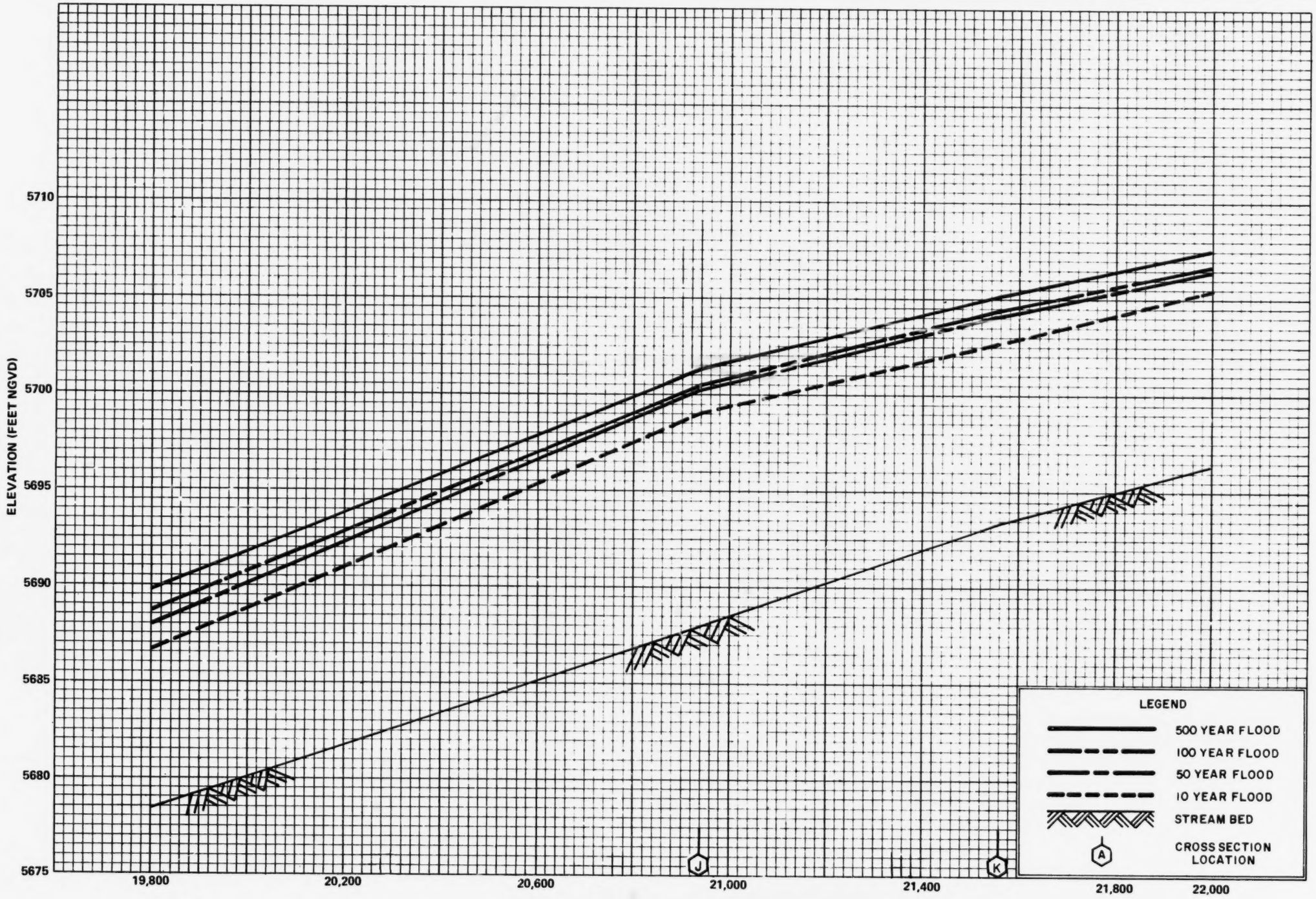
FLOOD PROFILES

COTTONWOOD CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
(UNINCORPORATED AREAS)

48P



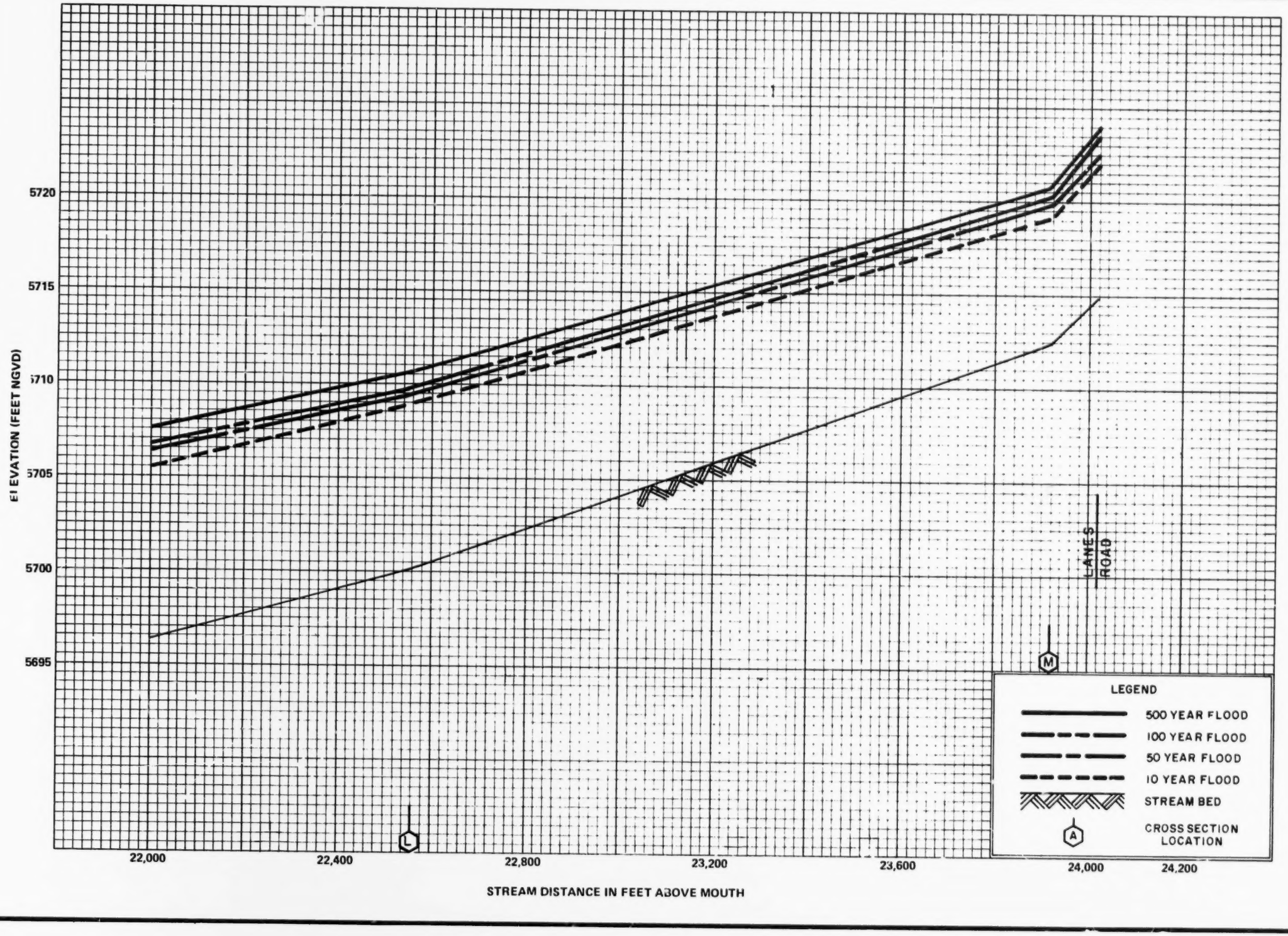
FLOOD PROFILES

COTTONWOOD CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
(UNINCORPORATED AREAS)

49P



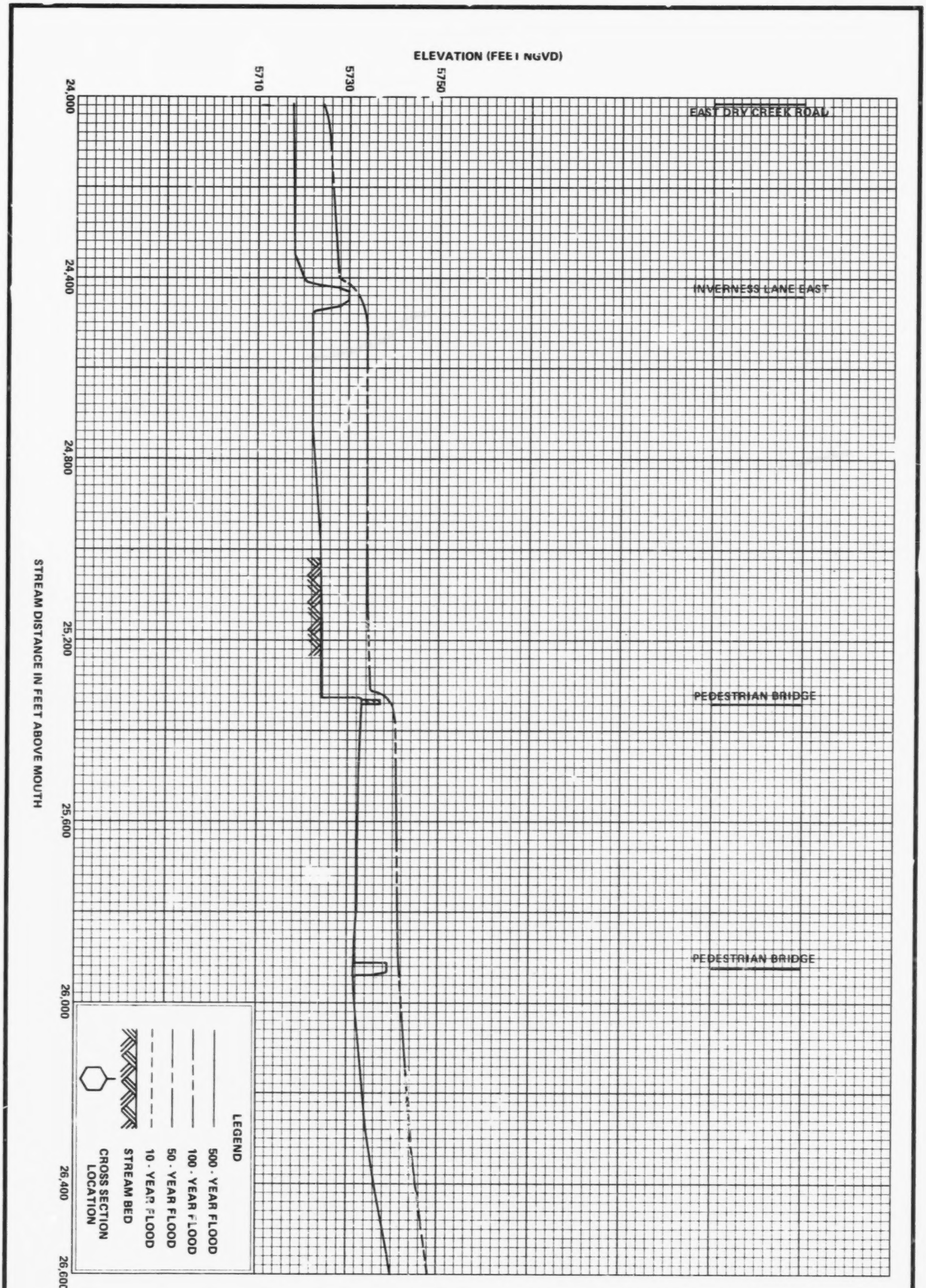
FLOOD PROFILES

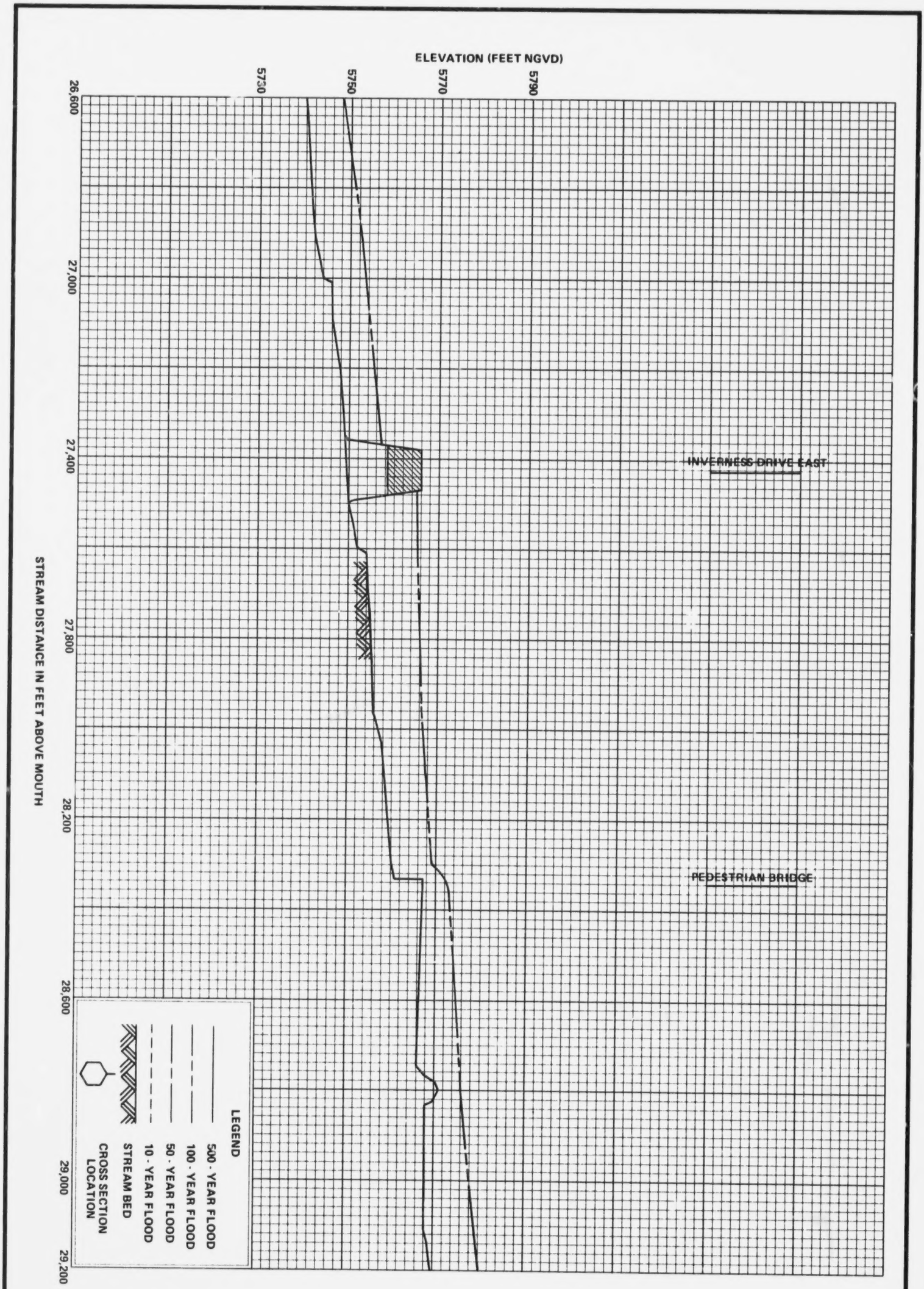
COTTONWOOD CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

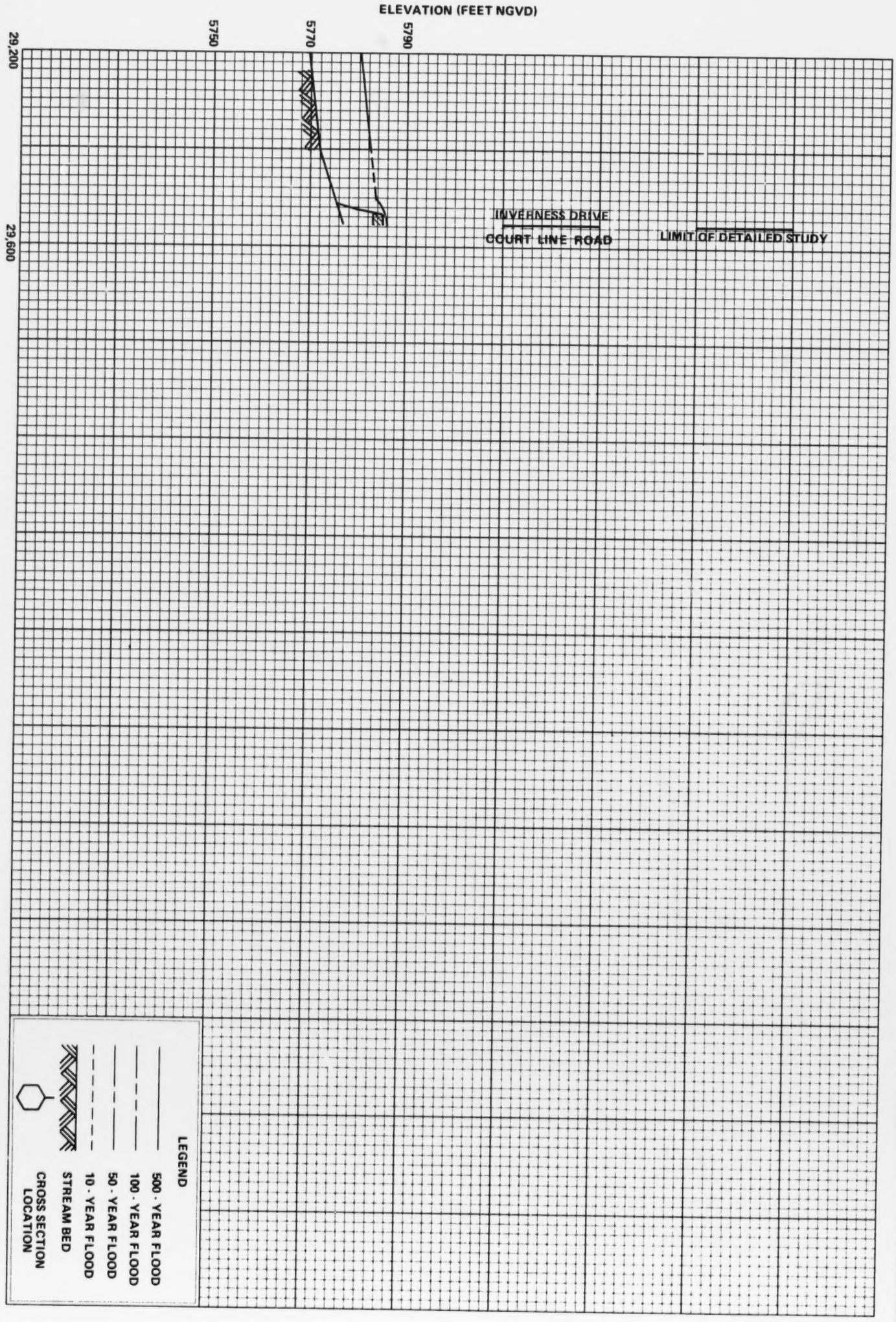
ARAPAHOE COUNTY, CO
(UNINCORPORATED AREAS)

50P


ELEVATION (FEET NGVD)
5710
5730
5750
24,000
24,400
24,800
25,200
25,600
26,000
26,400
26,600
STREAM DISTANCE IN FEET ABOVE MOUTH
EAST DRY CREEK ROAD
INVERNESS LANE EAST
PEDESTRIAN BRIDGE
PEDESTRIAN BRIDGE
LEGEND
500 - YEAR FLOOD
100 - YEAR FLOOD
50 - YEAR FLOOD
10 - YEAR FLOOD
STREAM BED
CROSS SECTION LOCATION

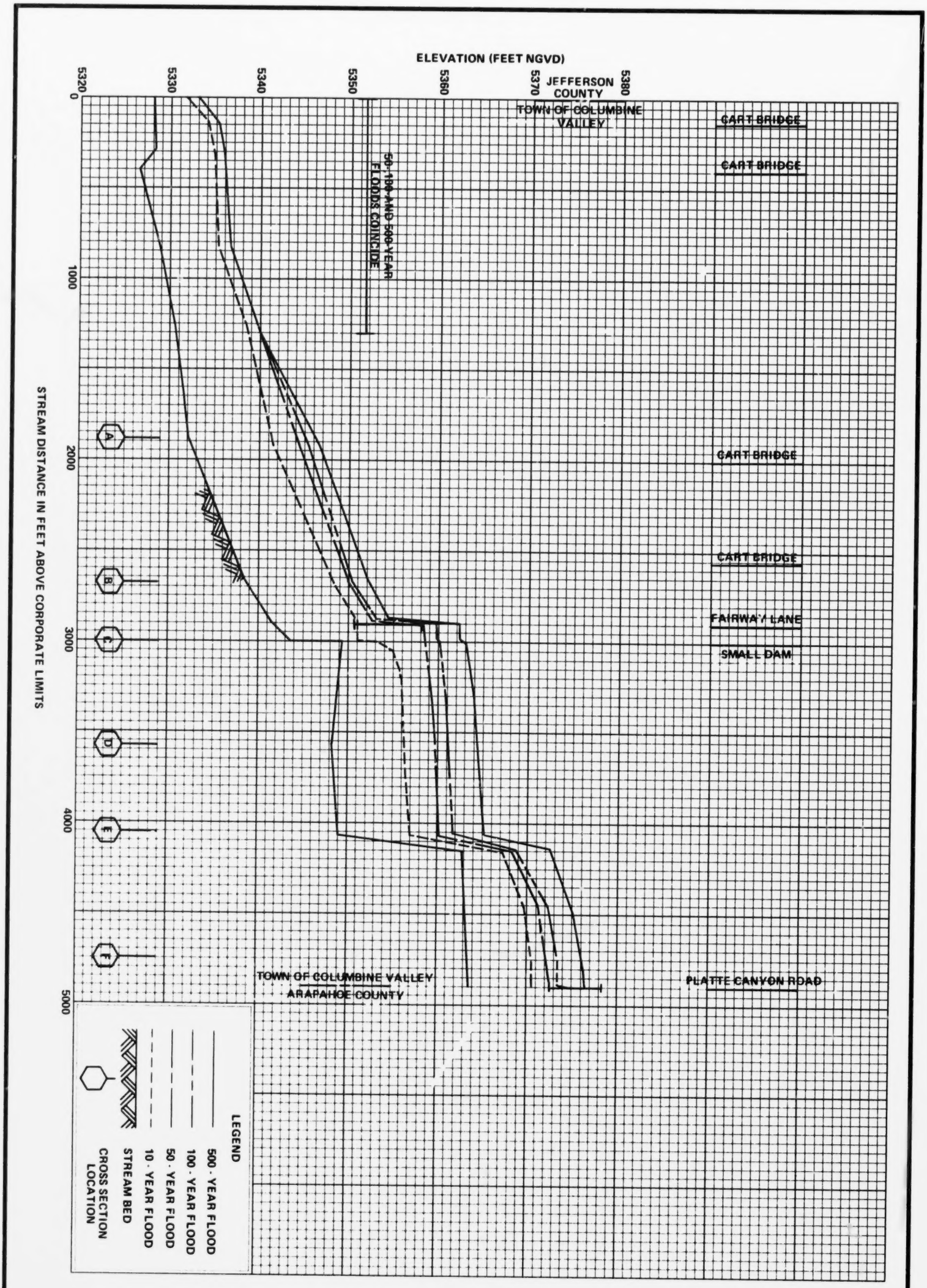


52P	FEDERAL EMERGENCY MANAGEMENT AGENCY ARAPAHOE COUNTY, CO AND INCORPORATED AREAS	FLOOD PROFILES COTTONWOOD CREEK



185

53P	FEDERAL EMERGENCY MANAGEMENT AGENCY ARAPAHOE COUNTY, CO AND INCORPORATED AREAS	FLOOD PROFILES COTTONWOOD CREEK



146

54P

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
AND INCORPORATED AREAS

FLOOD PROFILES

DUTCH CREEK

TOWN OF COLUMBINE VALLEY
ARAPAHOE COUNTY

PLATTE CANYON ROAD

ELEVATION (FEET NGVD)

5400
5380
5360

4900 5300 5700 6100 6500 6900 7300 7500

STREAM DISTANCE IN FEET ABOVE CORPORATE LIMITS

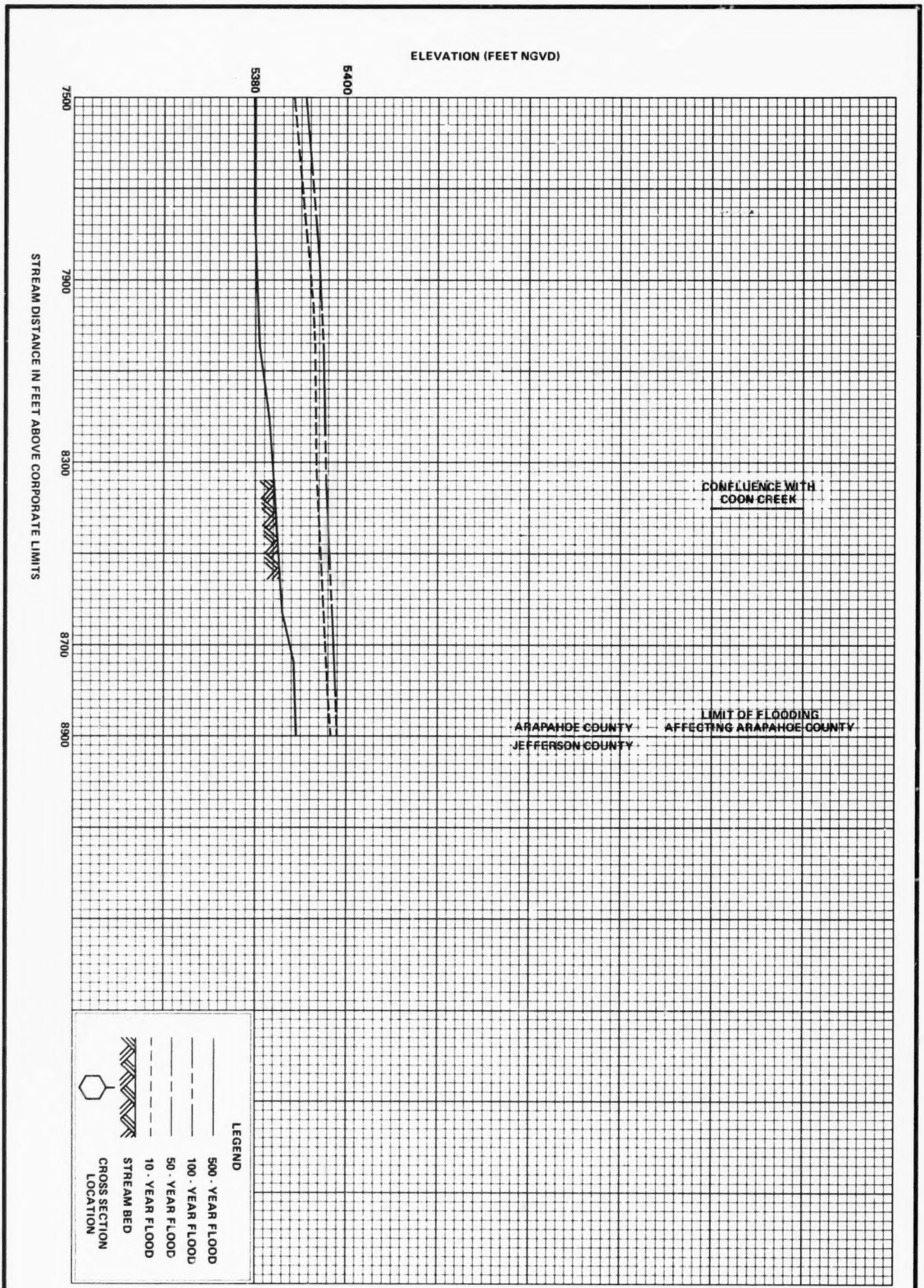
LEGEND
- 500 - YEAR FLOOD
- 100 - YEAR FLOOD
- 50 - YEAR FLOOD
- 10 - YEAR FLOOD
- STREAM BED
- CROSS SECTION LOCATION

FLOOD PROFILES

DUTCH CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY
ARAPAHOE COUNTY, CO
AND INCORPORATED AREAS

55P

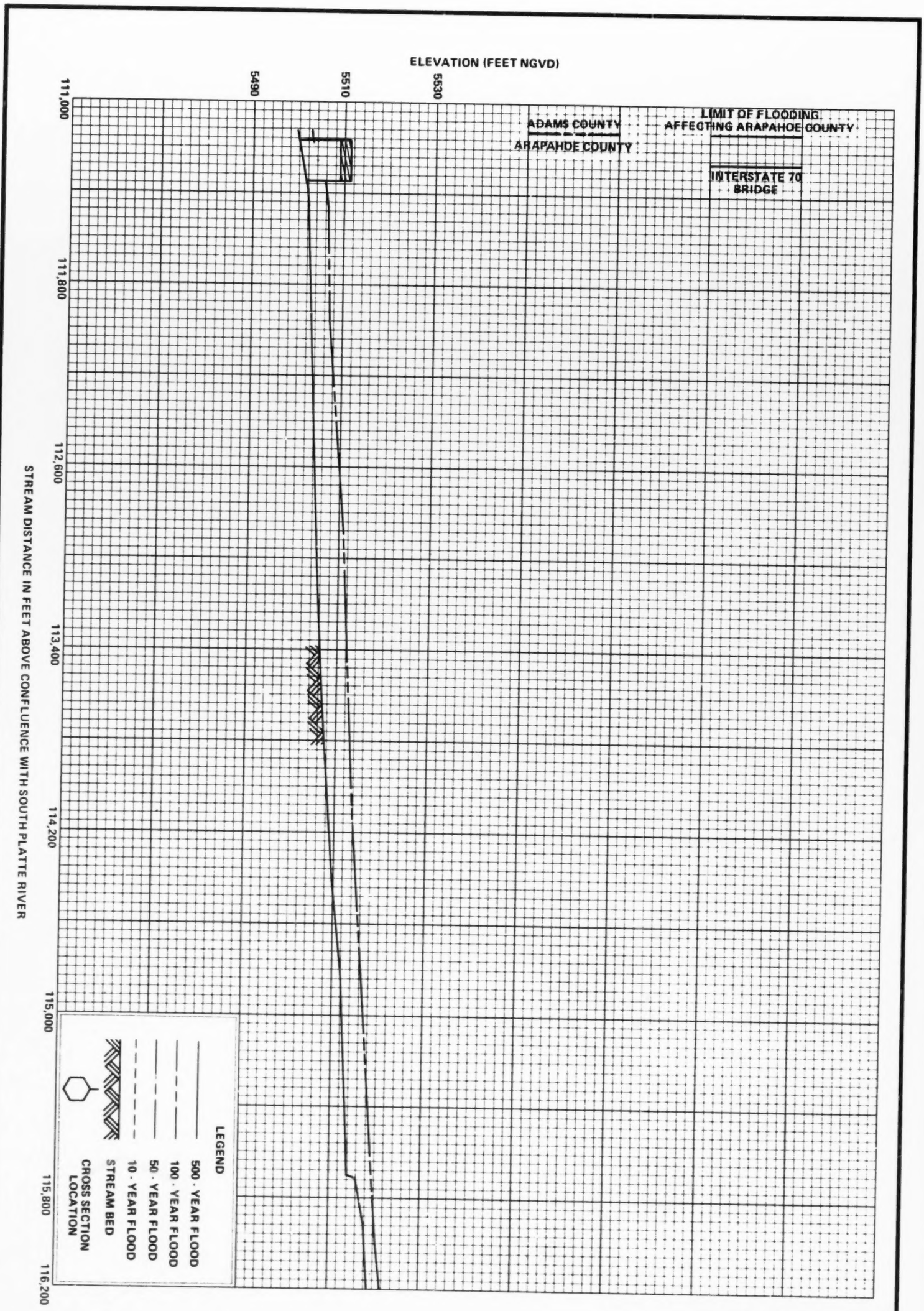


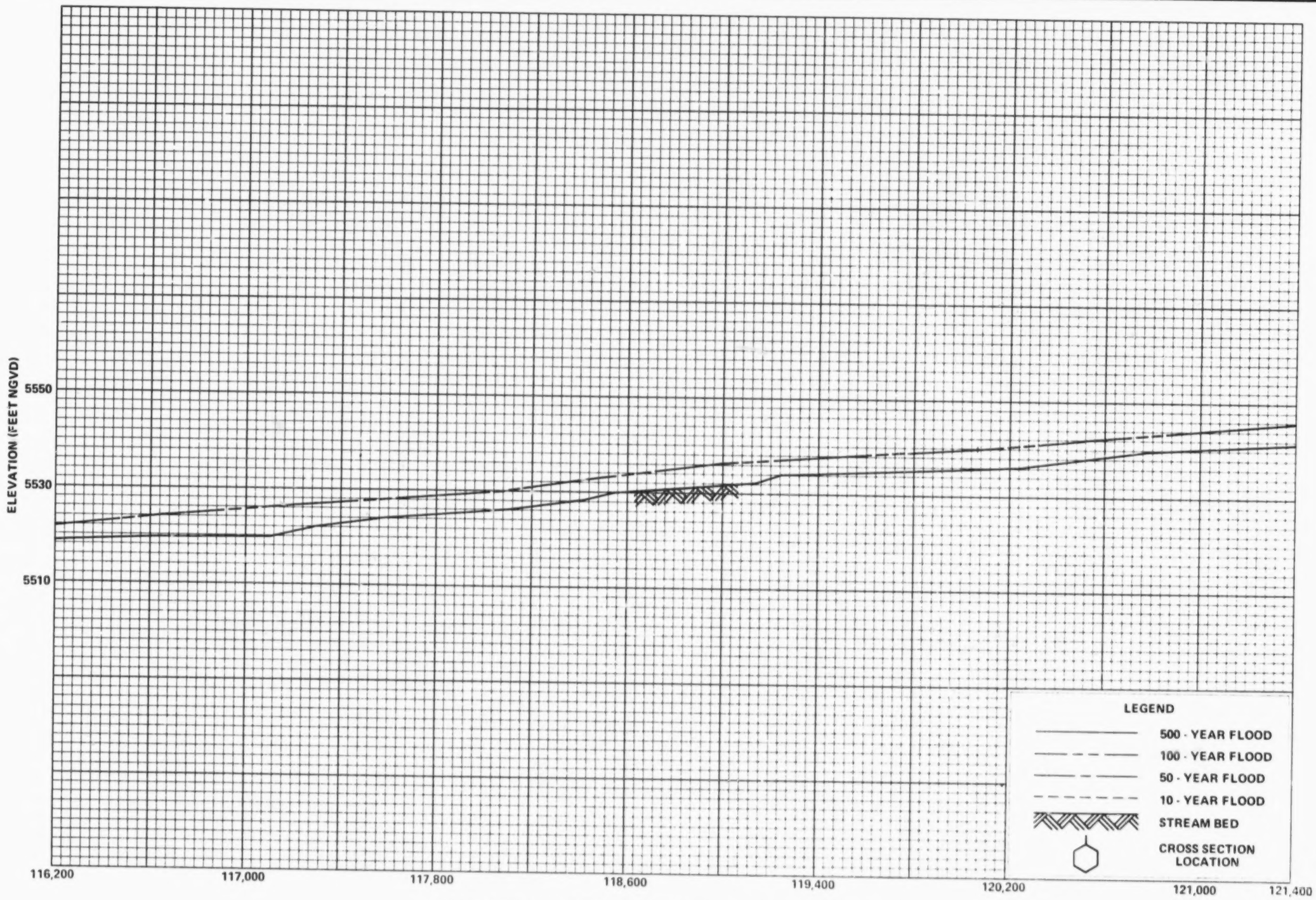
FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
AND INCORPORATED AREAS

FLOOD PROFILES

DUTCH CREEK


ELEVATION (FEET NGVD)
5490
5510
5530
111,000
111,800
112,600
113,400
114,200
115,000
115,800
116,200
ADAMS COUNTY
ARAPAHOE COUNTY
LIMIT OF FLOODING AFFECTING ARAPAHOE COUNTY
INTERSTATE 70 BRIDGE
STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH SOUTH PLATTE RIVER
LEGEND
500 - YEAR FLOOD
100 - YEAR FLOOD
50 - YEAR FLOOD
10 - YEAR FLOOD
STREAM BED
CROSS SECTION LOCATION



FLOOD PROFILES

FIRST CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
AND INCORPORATED AREAS

58P

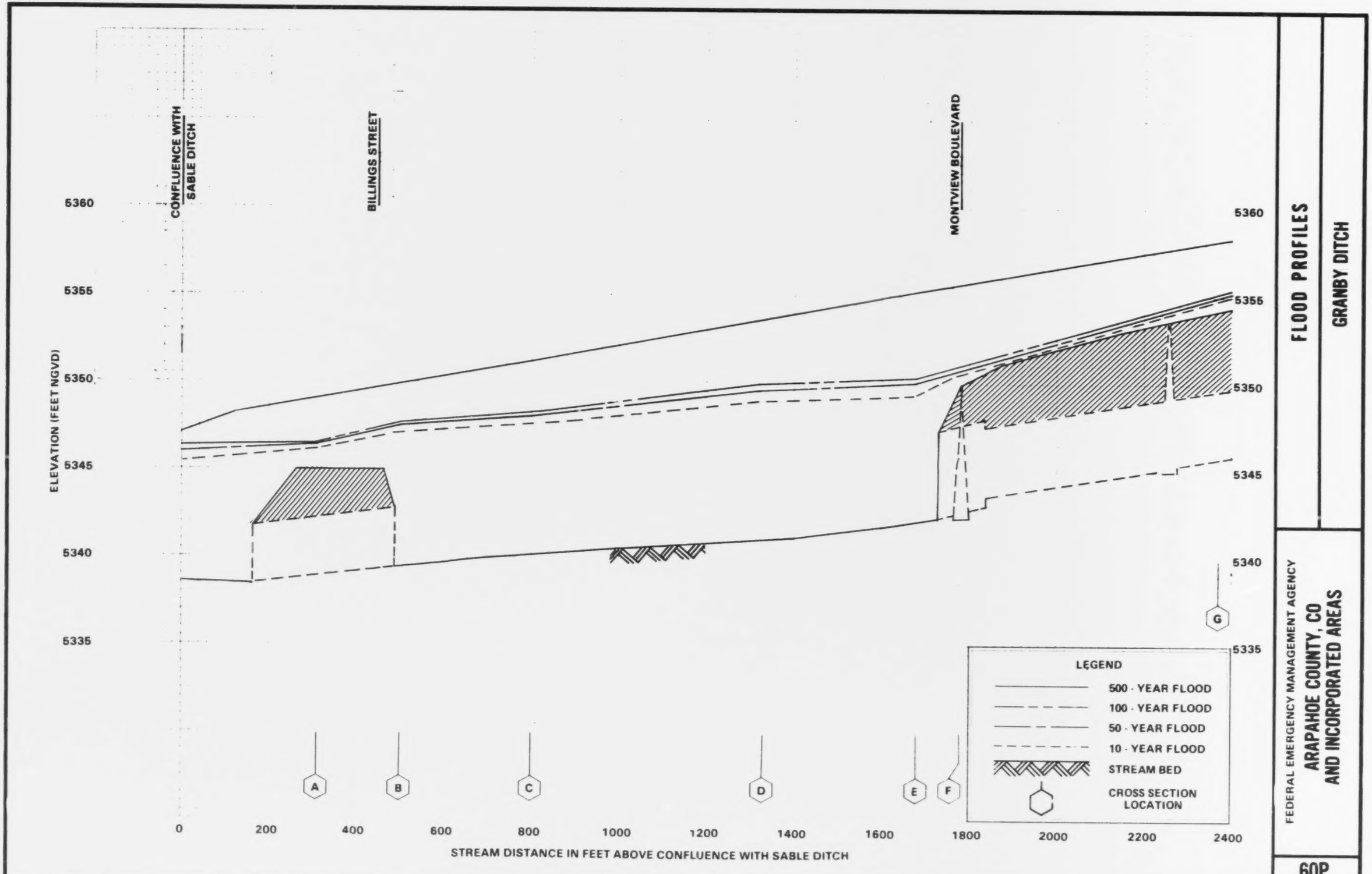
FLOOD PROFILES

FIRST CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
AND INCORPORATED AREAS

59P



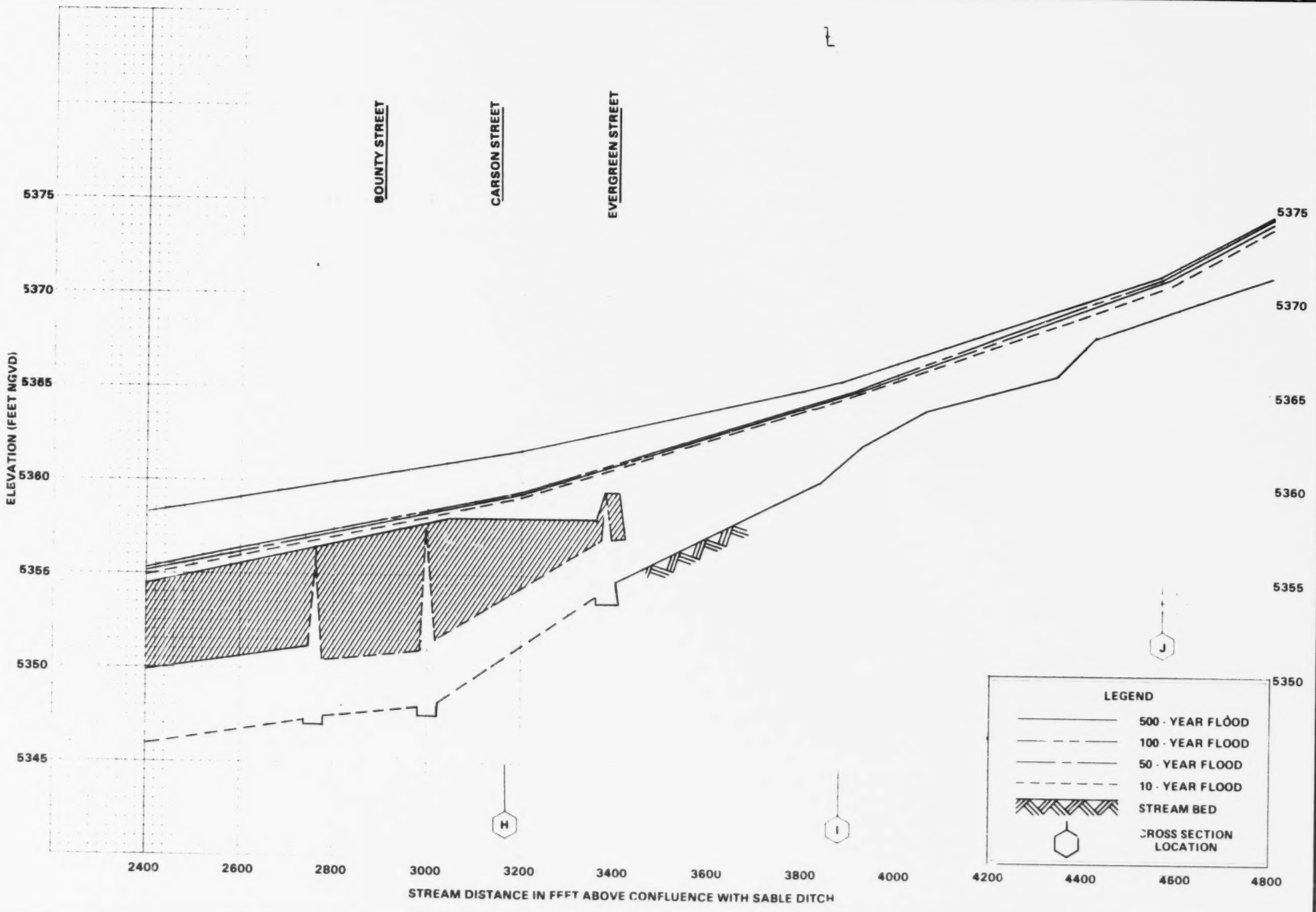
FLOOD PROFILES

GRANBY DITCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
AND INCORPORATED AREAS

60P



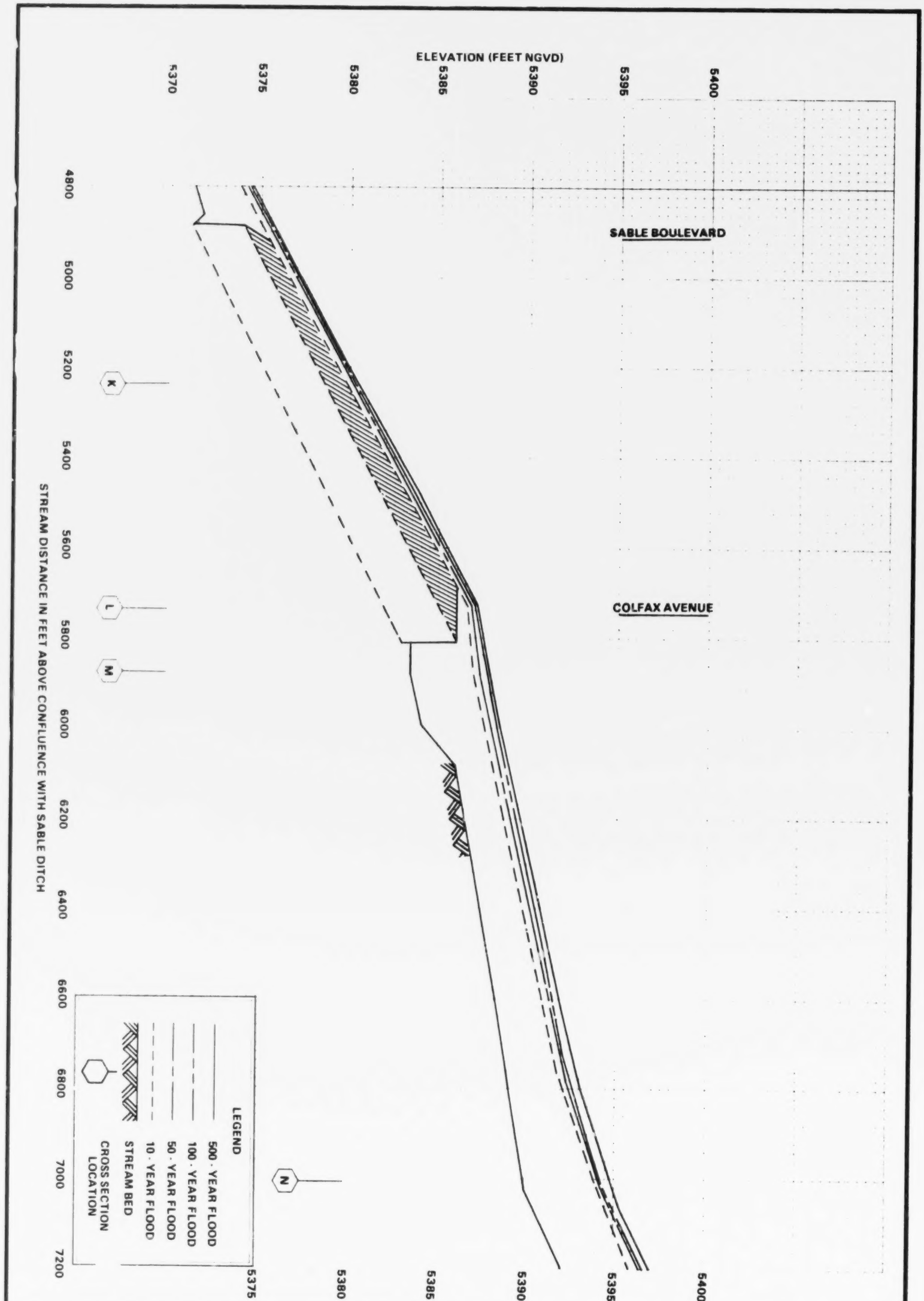
FLOOD PROFILES

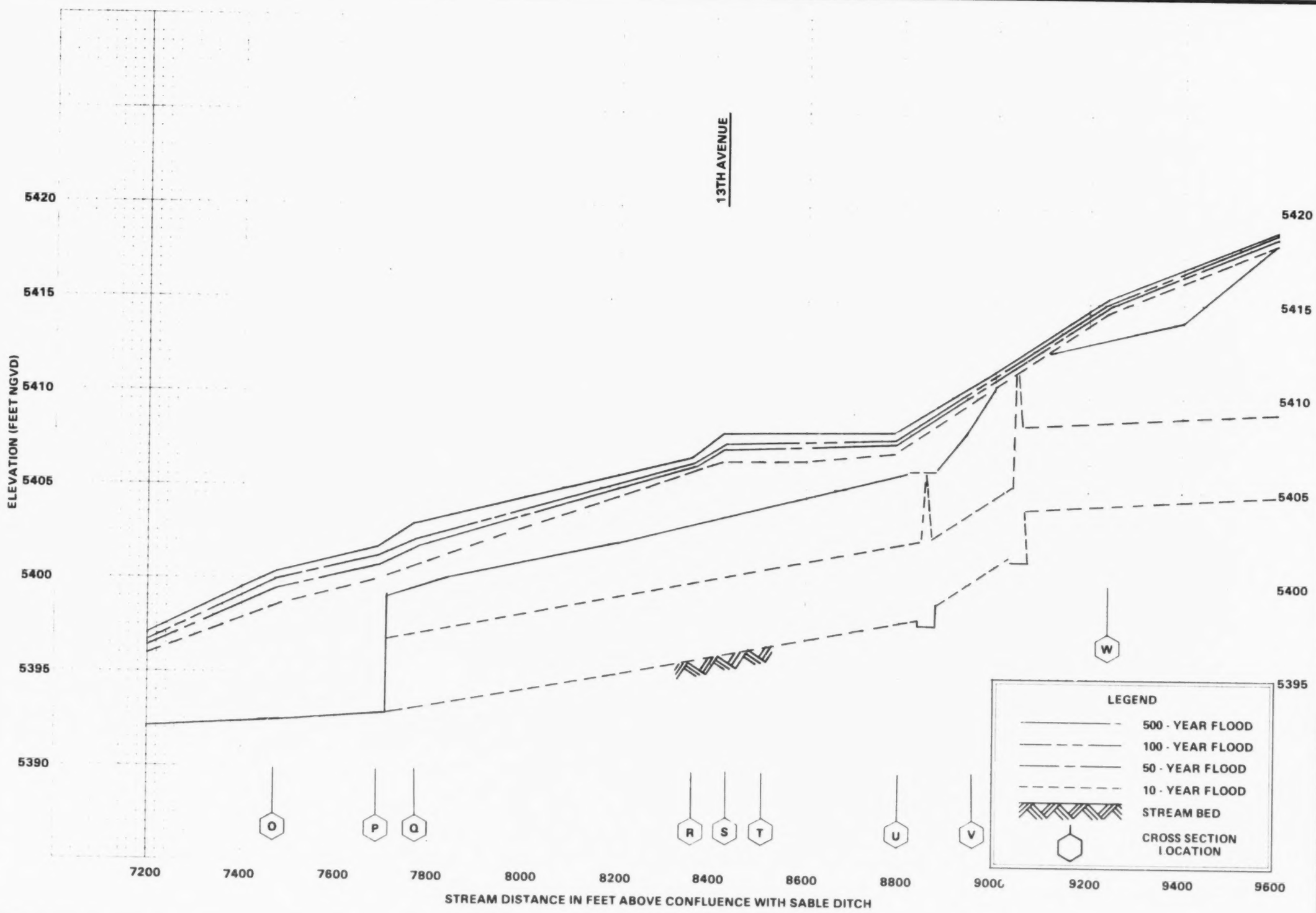
GRANBY DITCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
AND INCORPORATED AREAS

61P


ELEVATION (FEET NGVD)
5370
5375
5380
5385
5390
5395
5400
SABLE BOULEVARD
COLFAX AVENUE
STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH SABLE DITCH
4800
5000
5200
5400
5600
5800
6000
6200
6400
6600
6800
7000
7200
K
L
M
N
LEGEND
500 - YEAR FLOOD
100 - YEAR FLOOD
50 - YEAR FLOOD
10 - YEAR FLOOD
STREAM BED
CROSS SECTION LOCATION



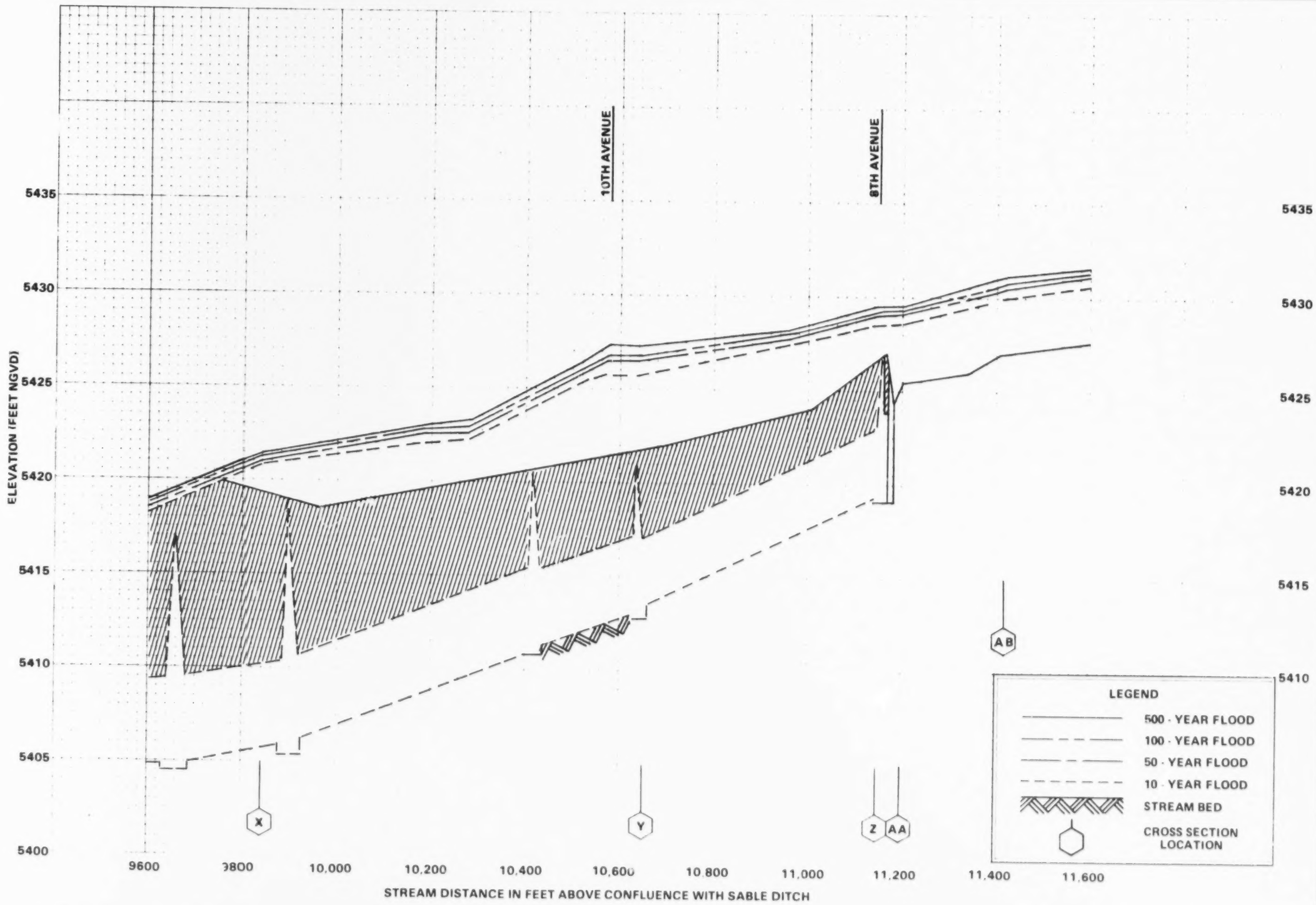
FLOOD PROFILES

GRANBY DITCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
AND INCORPORATED AREAS

63P



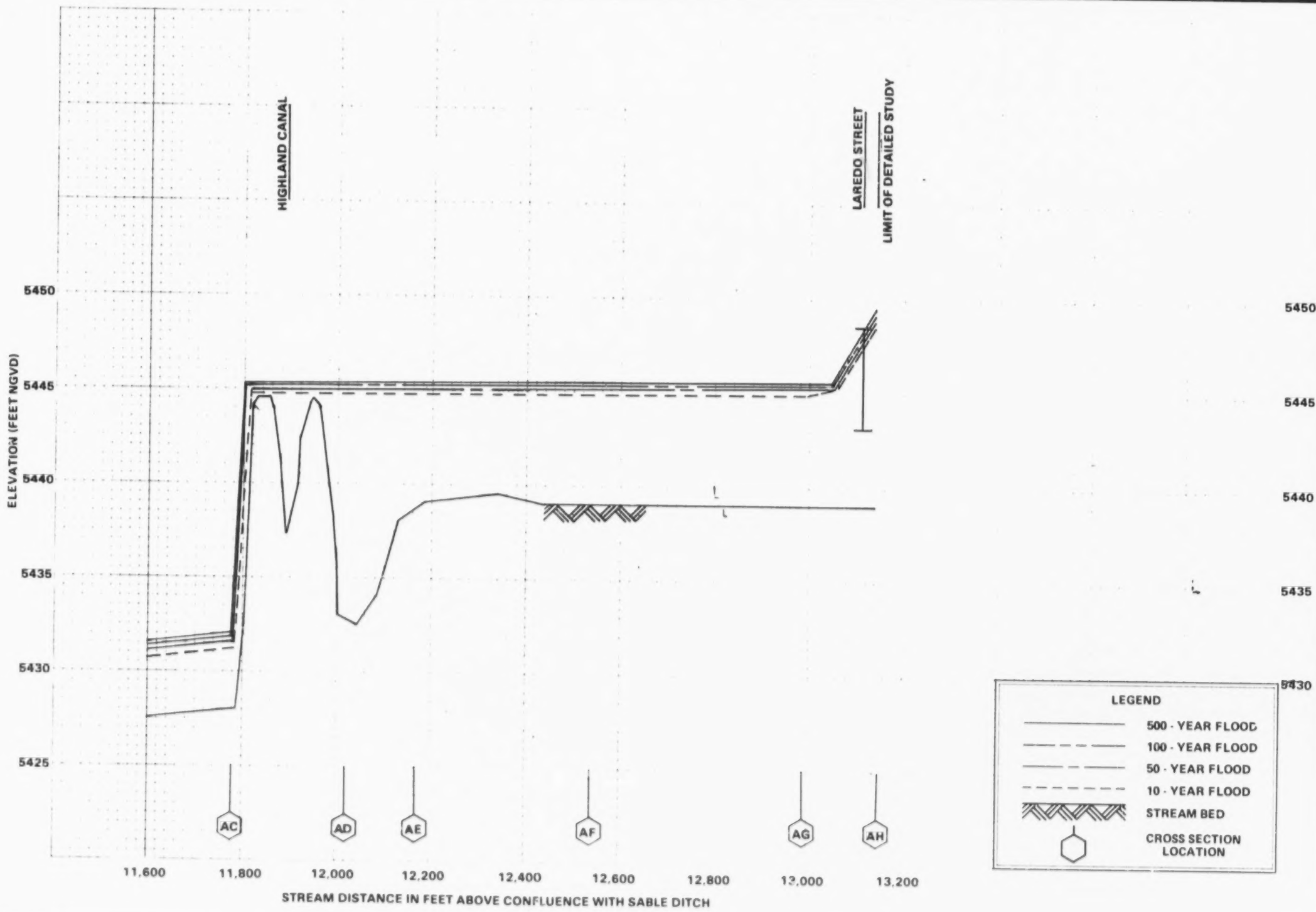
FLOOD PROFILES

GRANGY DITCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
AND INCORPORATED AREAS

64P



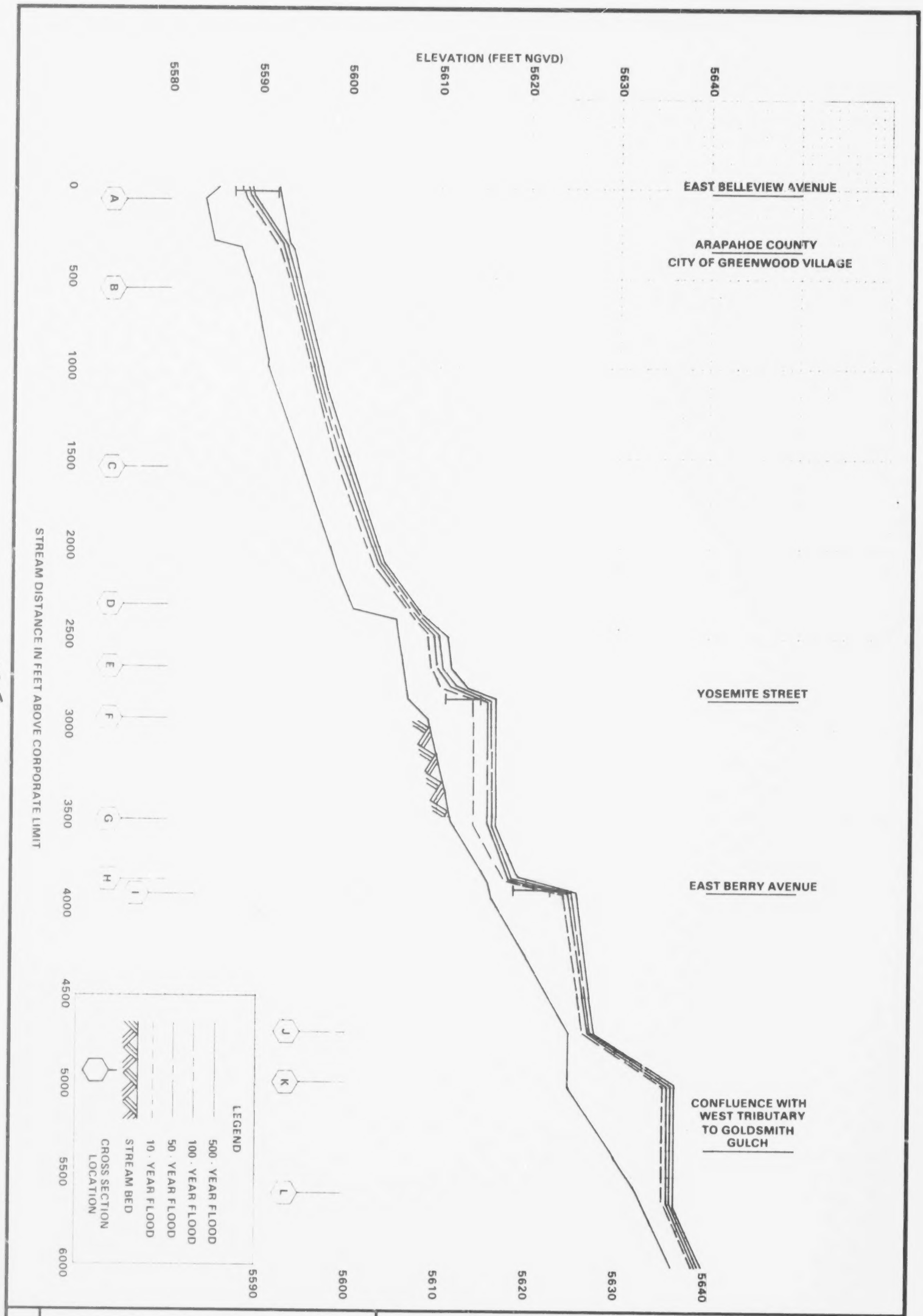
FLOOD PROFILES

GRANBY DITCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
AND INCORPORATED AREAS

65P



FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
AND INCORPORATED AREAS

FLOOD PROFILES

GOLDSMITH GULCH

66P

CITY OF GREENWOOD VILLAGE — ORCHARD ROAD

ELEVATION (FEET NGVD)

5670

5660

5650

5640

5630

M

N

6000

6500

7000

STREAM DISTANCE IN FEET ABOVE CORPORATE LIMIT

5670

5660

5650

5640

LEGEND

- 500 - YEAR FLOOD
- 100 - YEAR FLOOD
- 50 - YEAR FLOOD
- 10 - YEAR FLOOD
- STREAM BED
- CROSS SECTION LOCATION

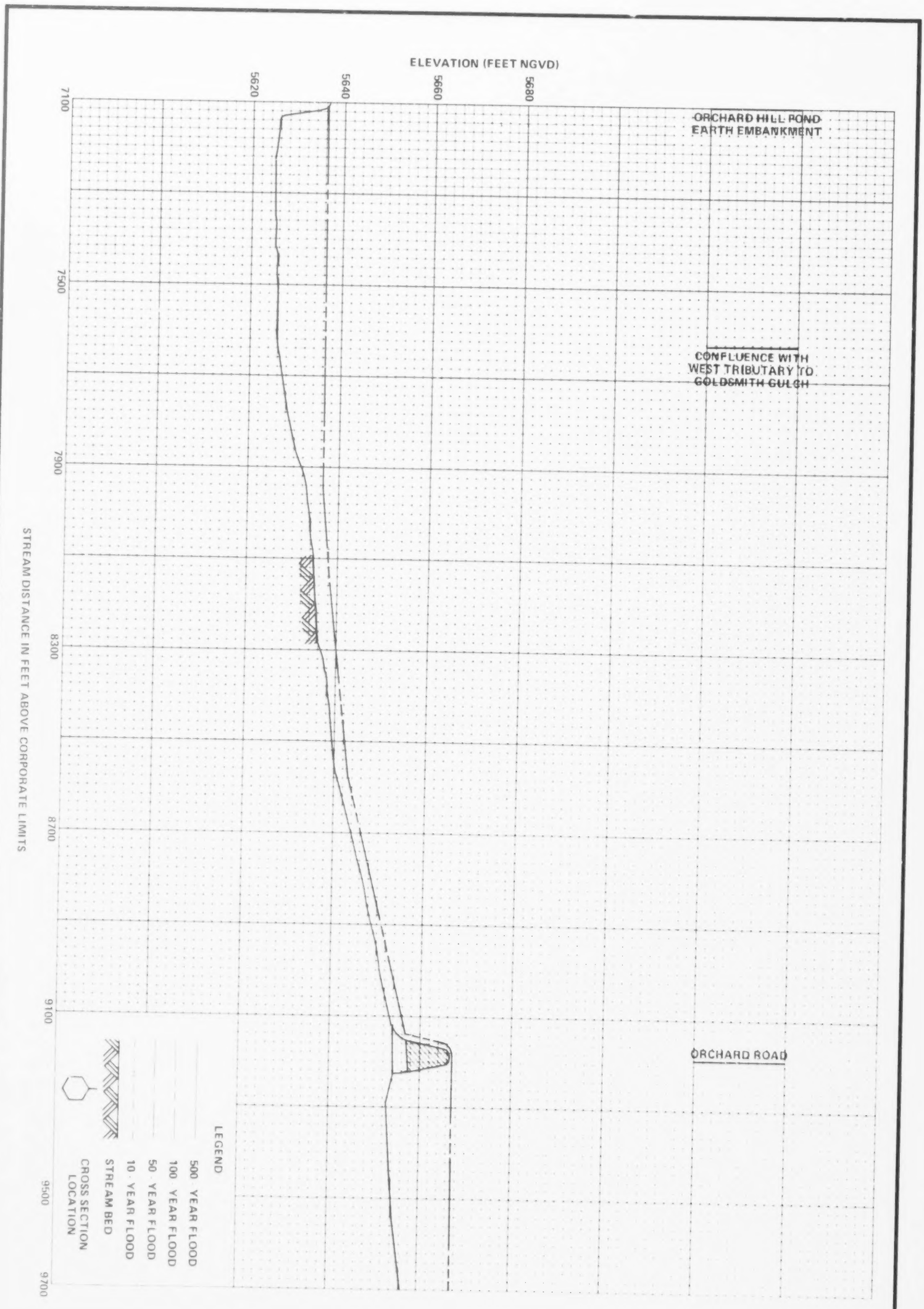
FLOOD PROFILES

GOLDSMITH GULCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
AND INCORPORATED AREAS

67P



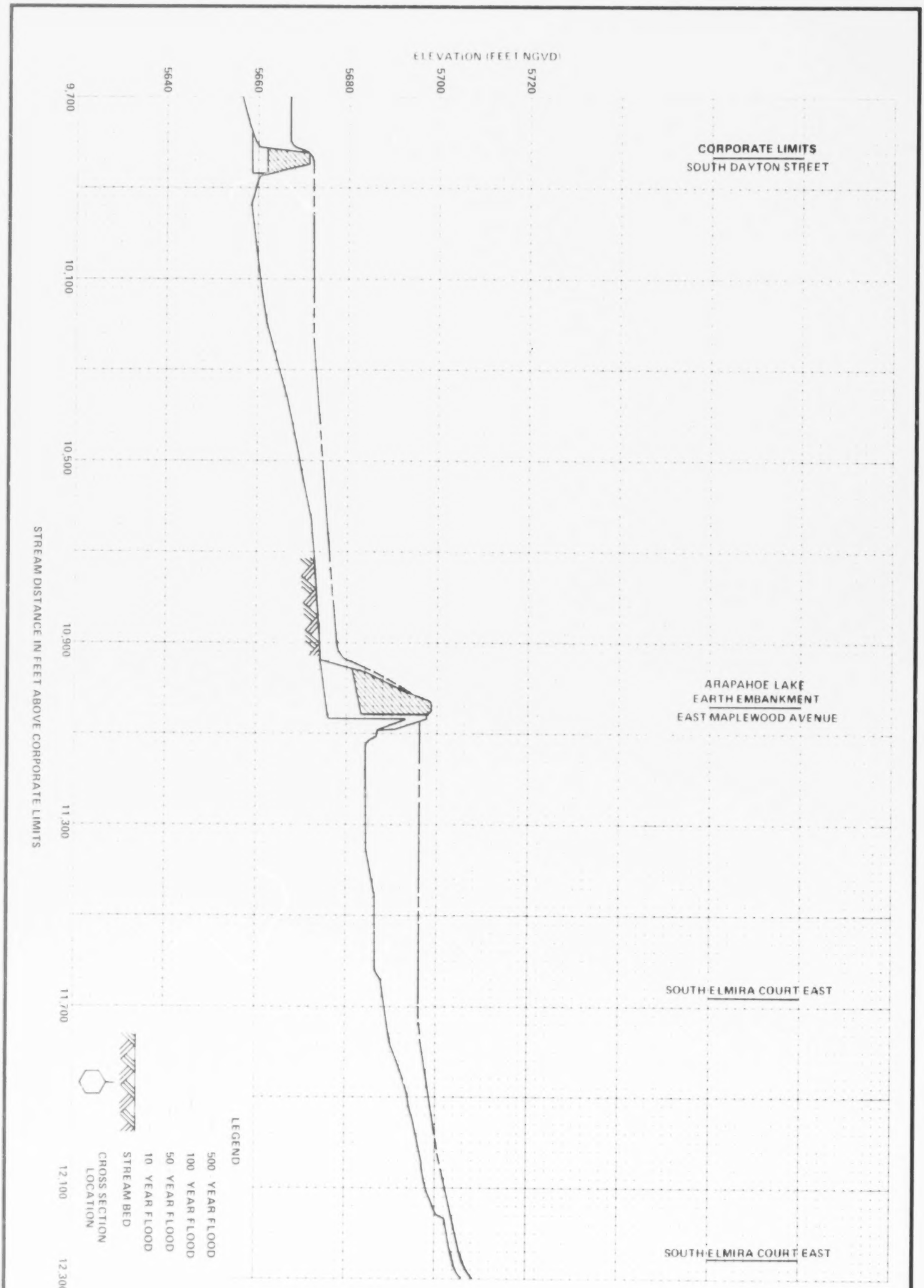
68P

FEDERAL EMERGENCY MANAGEMENT AGENCY

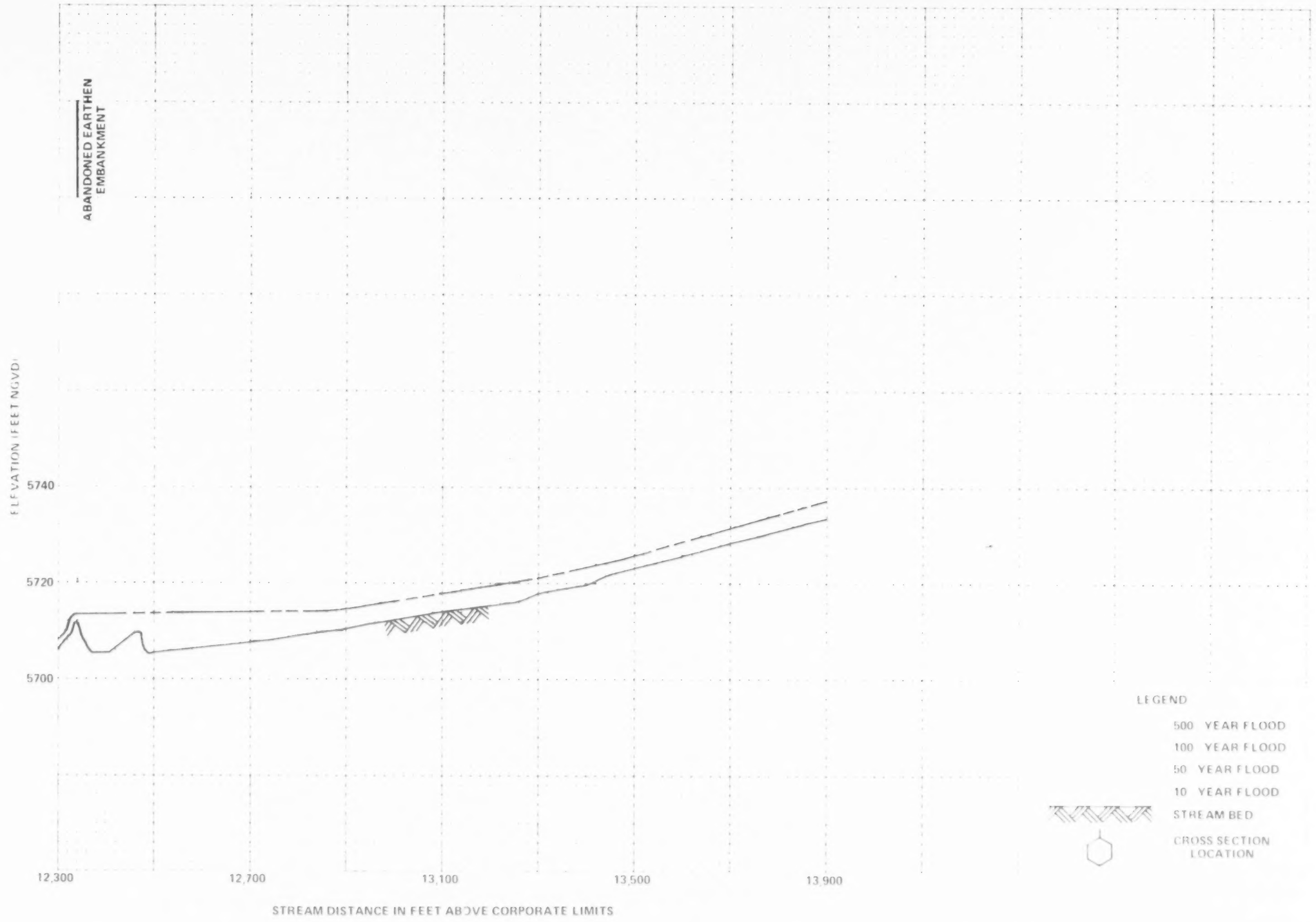
ARAPAHOE COUNTY, CO
AND INCORPORATED AREAS

FLOOD PROFILES

GOLDSMITH GULCH



69P	FEDERAL EMERGENCY MANAGEMENT AGENCY ARAPAHOE COUNTY, CO AND INCORPORATED AREAS	**FLOOD PROFILES** GOLDSMITH GULCH



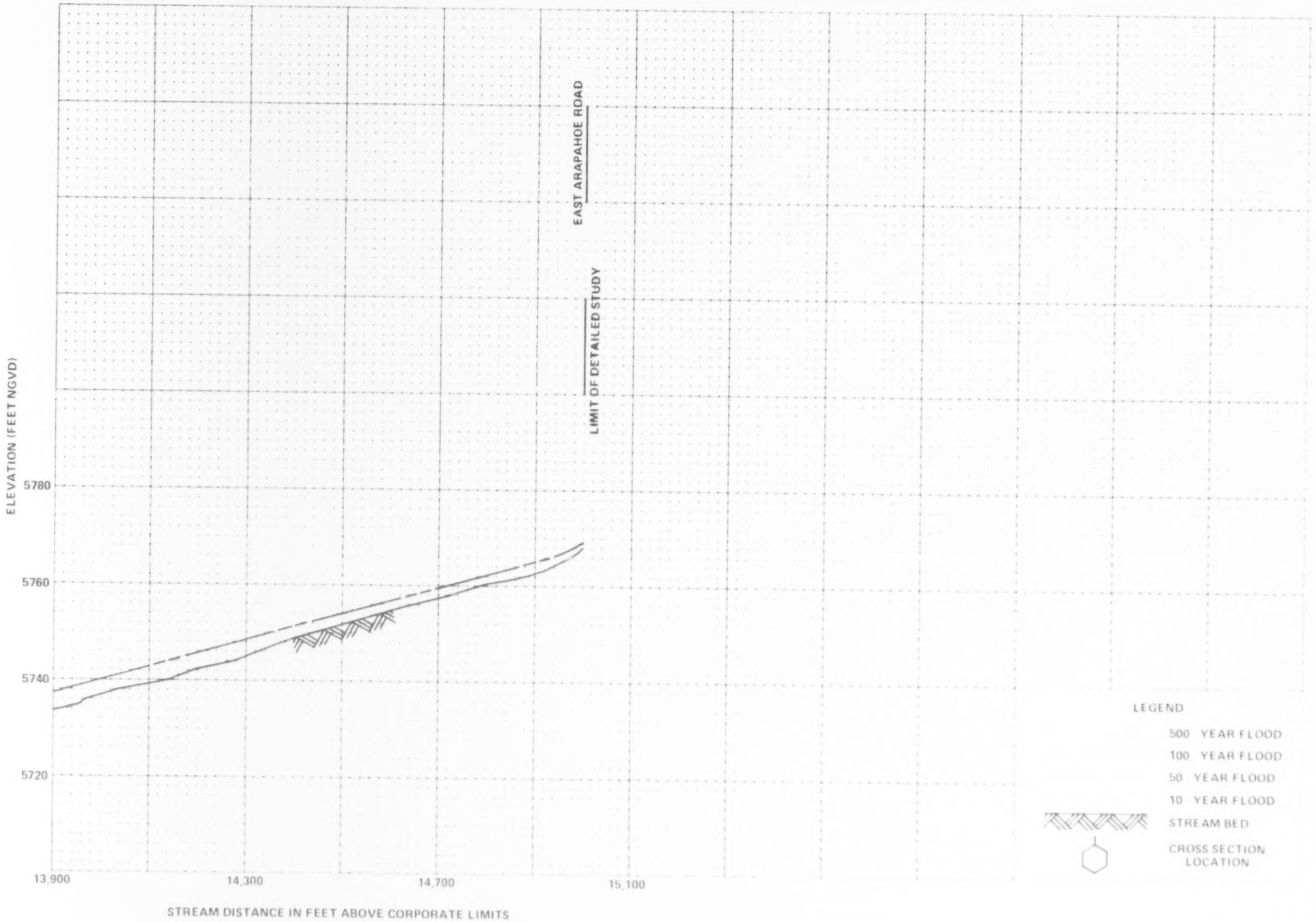
FLOOD PROFILES

GOLDSMITH GULCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
AND INCORPORATED AREAS

70P



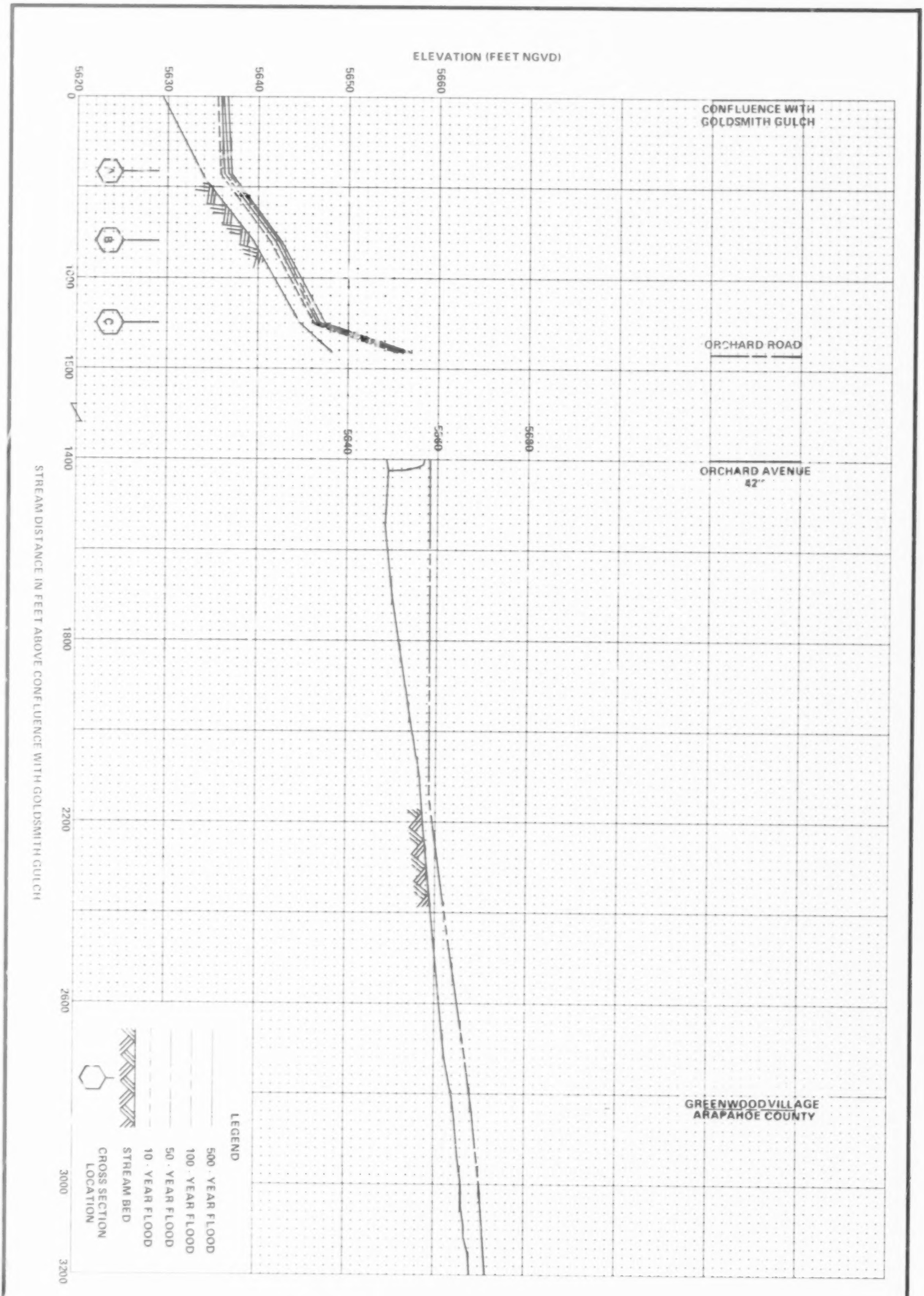
FLOOD PROFILES

GOLDSMITH GULCH

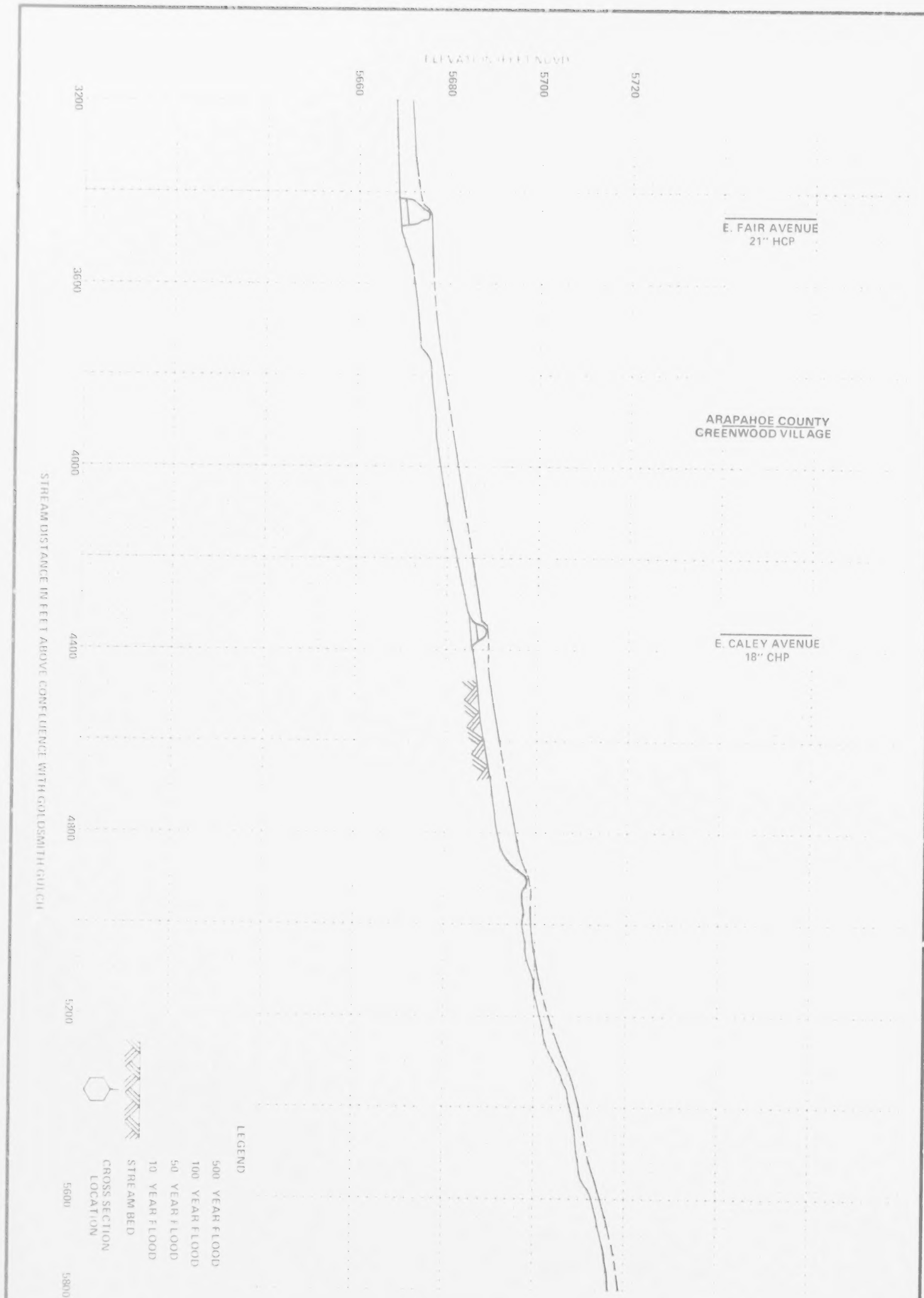
FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
AND INCORPORATED AREAS

71P



72P	FEDERAL EMERGENCY MANAGEMENT AGENCY ARAPAHOE COUNTY, CO AND INCORPORATED AREAS	FLOOD PROFILES WEST TRIB GOLDSMITH GULCH



145

73P	FEDERAL EMERGENCY MANAGEMENT AGENCY ARAPAHOE COUNTY, CO AND INCORPORATED AREAS	FLOOD PROFILES WEST TRIB GOLDSMITH GULCH

74P	FEDERAL EMERGENCY MANAGEMENT AGENCY ARAPAHOE COUNTY, CO AND INCORPORATED AREAS	FLOOD PROFILES WEST TRIB GOLDSMITH GULCH

NOTE: GREENWOOD GULCH FLOW OUT OF CHANNEL FOLLOWS CITY DITCH

CONFLUENCE WITH LITTLE DRY CREEK

SOUTH OGDEN STREET

CORONA STREET

ELEVATION (FEET NGVD)

5360
5355
5350
5345
5340
5335
5330
5325

0
1000
2000
3000
4000

5380
5375
5370
5365
5360
5355

4000
5000
6000

A
B
C
D

LEGEND

500 YEAR FLOOD
100 YEAR FLOOD
50 YEAR FLOOD
10 YEAR FLOOD
STREAM BED
CROSS SECTION LOCATION

STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH LITTLE DRY CREEK

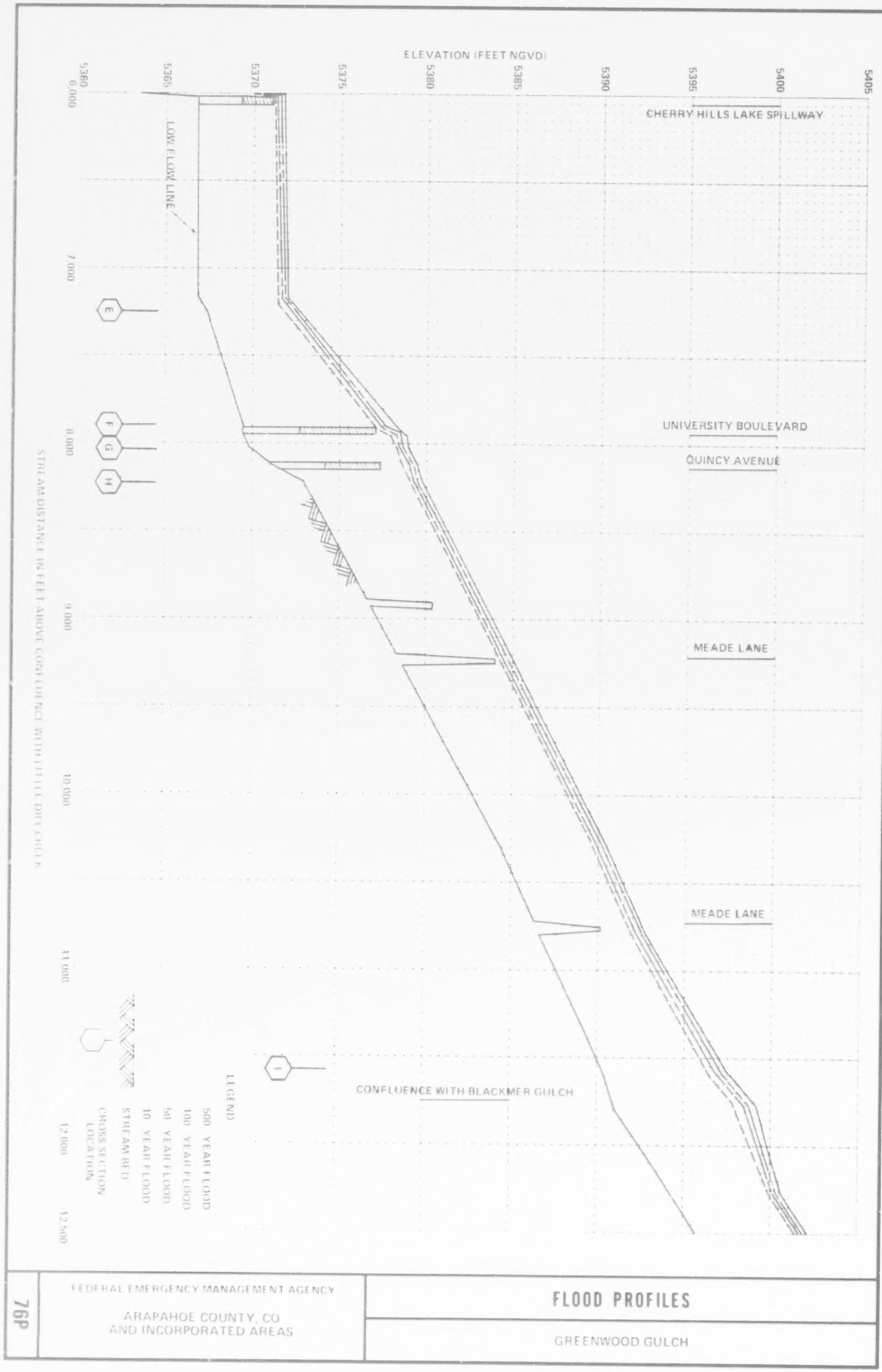
FLOOD PROFILES

GREENWOOD GULCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
AND INCORPORATED AREAS

75P



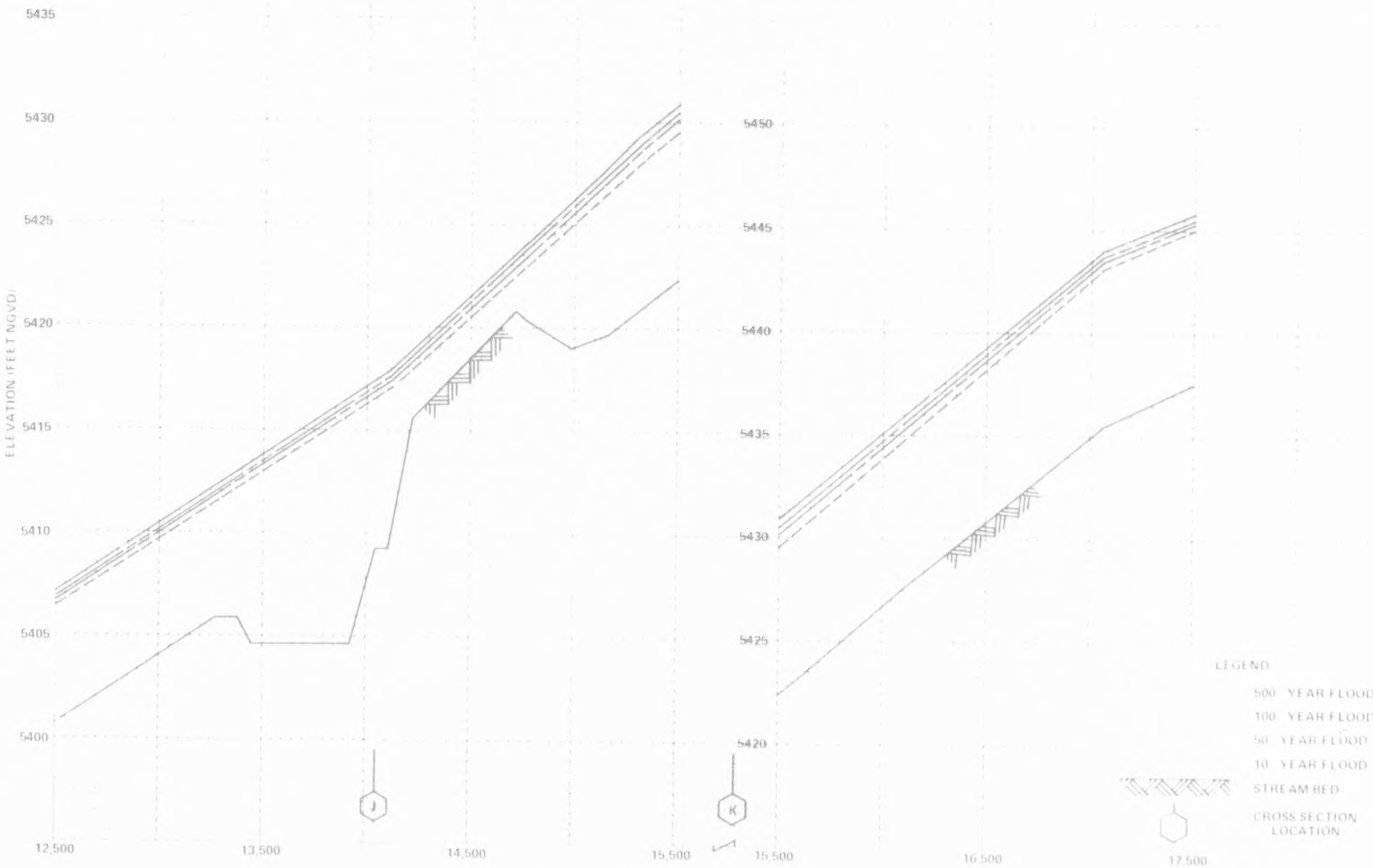
76P

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
AND INCORPORATED AREAS

FLOOD PROFILES

GREENWOOD GULCH



FLOOD PROFILES

GREENWOOD GULCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO.
AND INCORPORATED AREAS

77P

LEGEND

500 YEAR FLOOD
100 YEAR FLOOD
50 YEAR FLOOD
10 YEAR FLOOD
STREAM BED
CROSS SECTION LOCATION

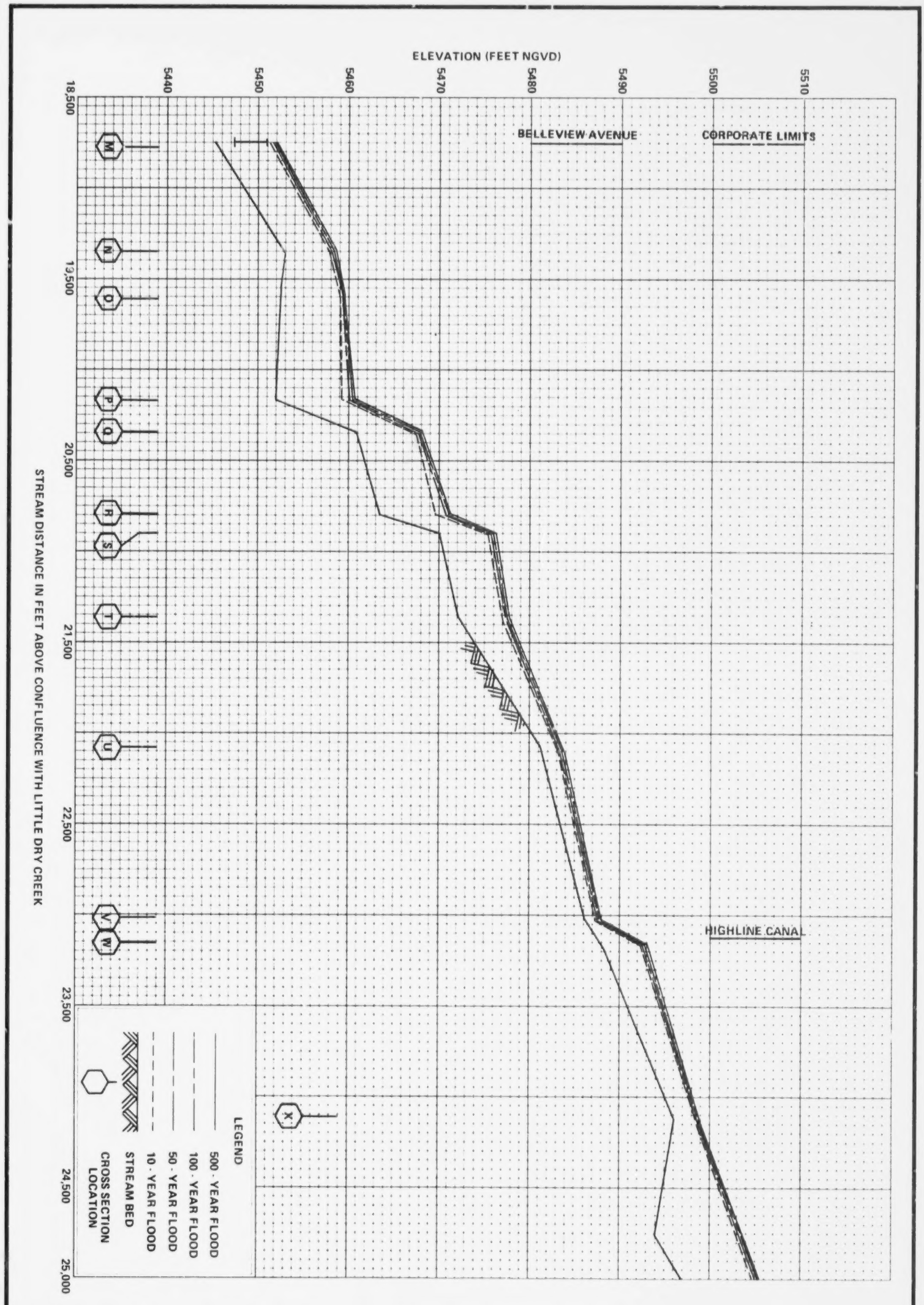
FLOOD PROFILES

GREENWOOD GULCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO.
AND INCORPORATED AREAS

78P



FEDERAL EMERGENCY MANAGEMENT AGENCY

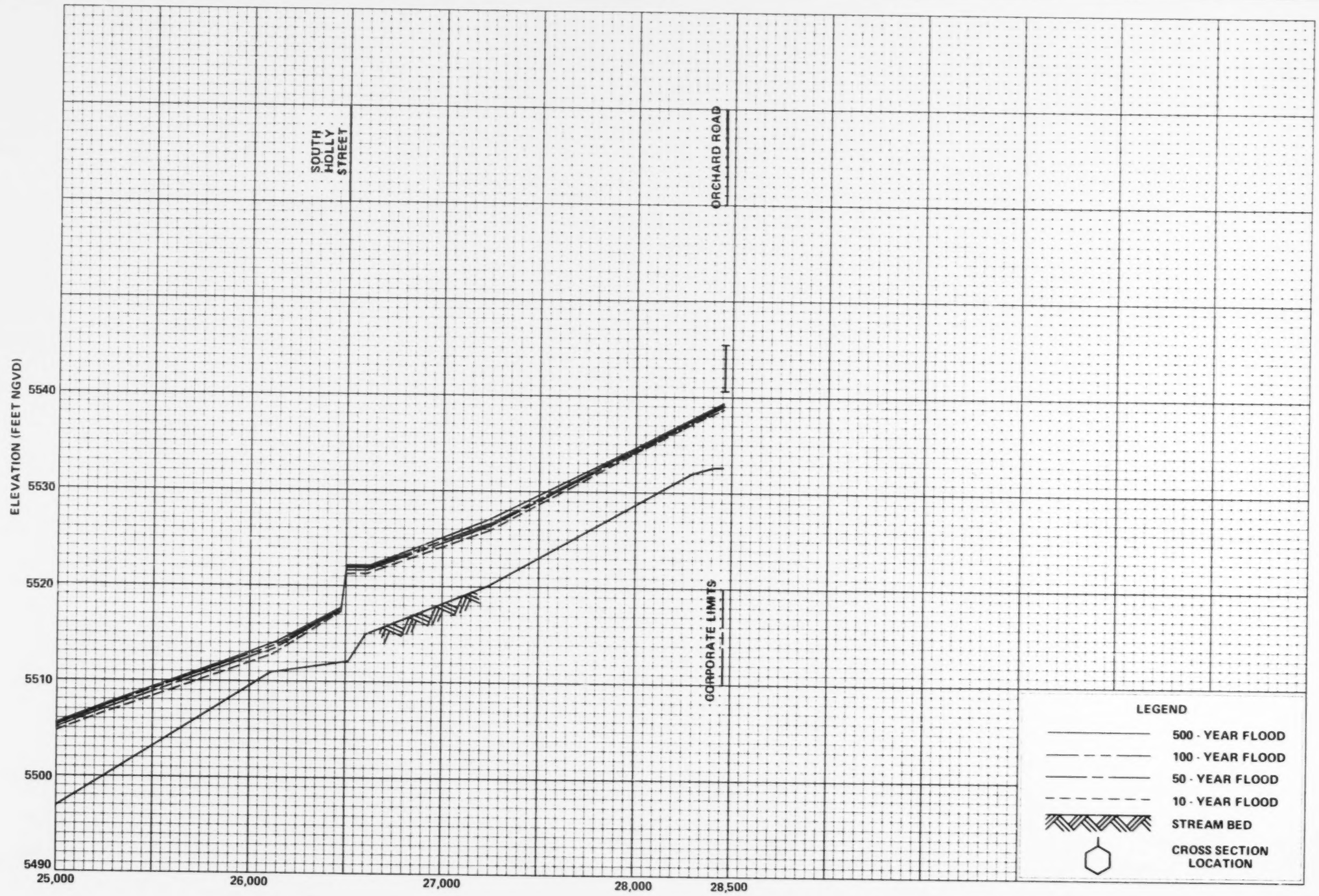
ARAPAHOE COUNTY, CO
AND INCORPORATED AREAS

FLOOD PROFILES

GREENWOOD GULCH

79P

151



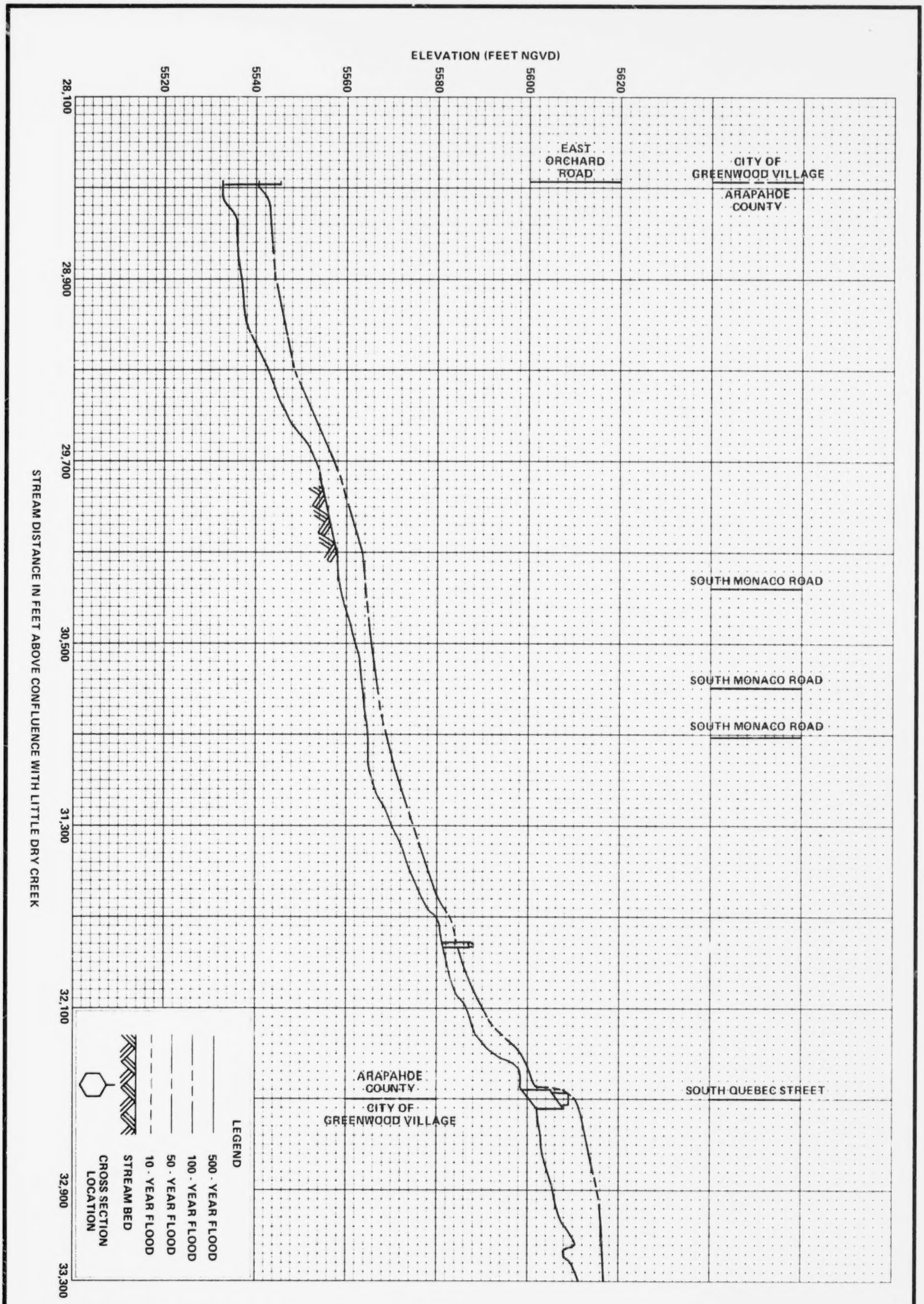
FLOOD PROFILES

GREENWOOD GULCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
AND INCORPORATED AREAS

80P



133

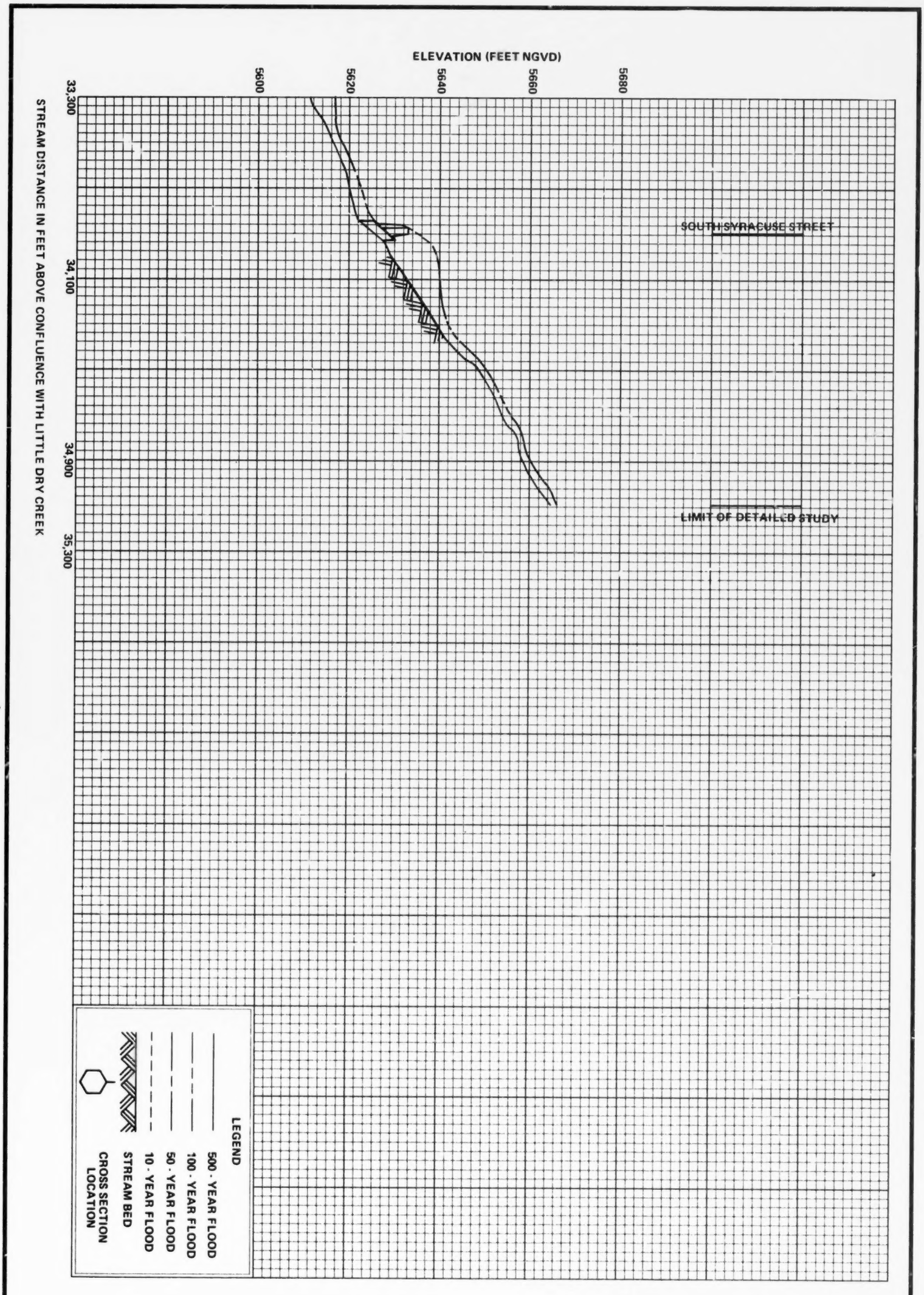
81P

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
AND INCORPORATED AREAS

FLOOD PROFILES

GREENWOOD GULCH



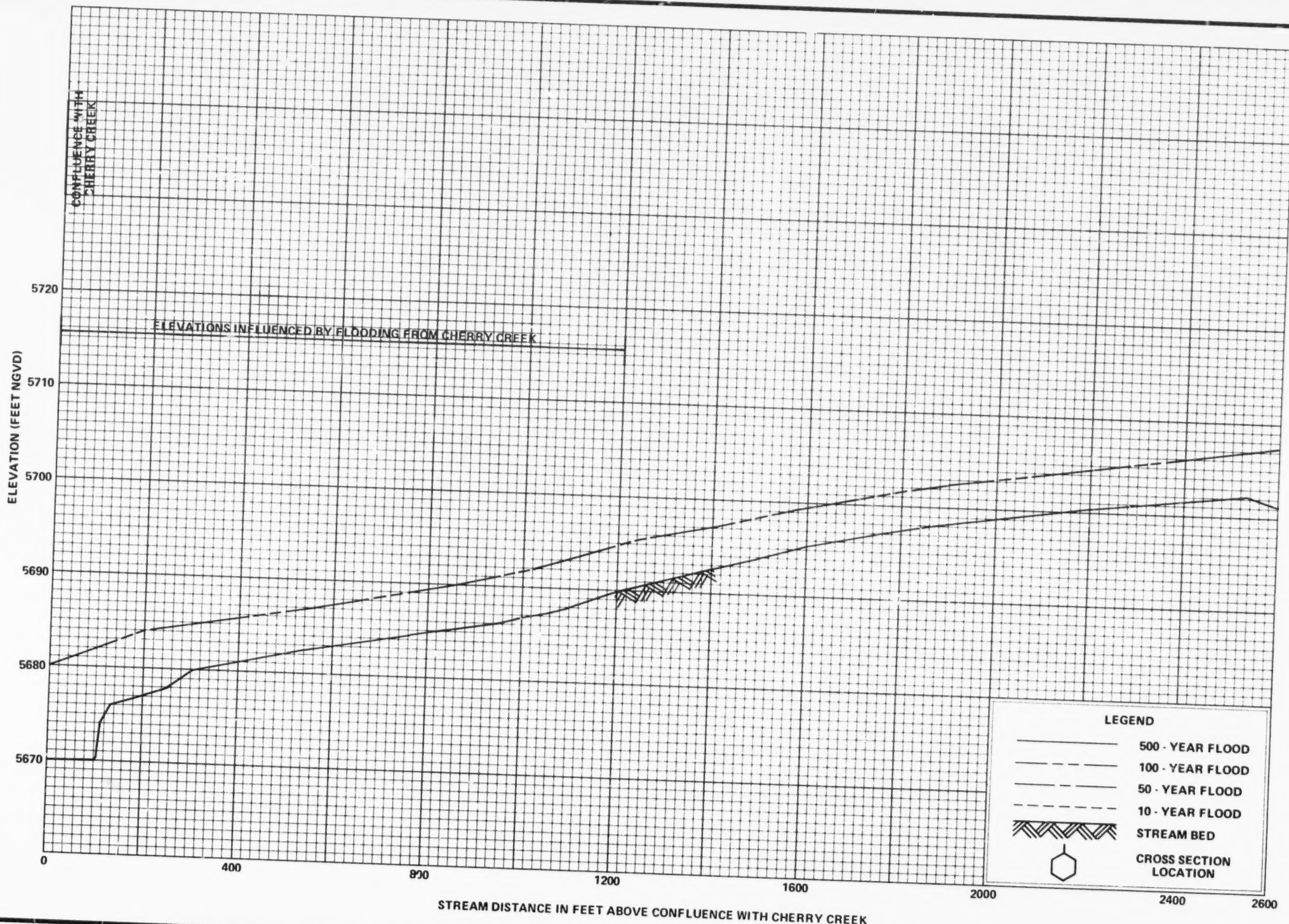
82P

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
AND INCORPORATED AREAS

FLOOD PROFILES

GREENWOOD GULCH



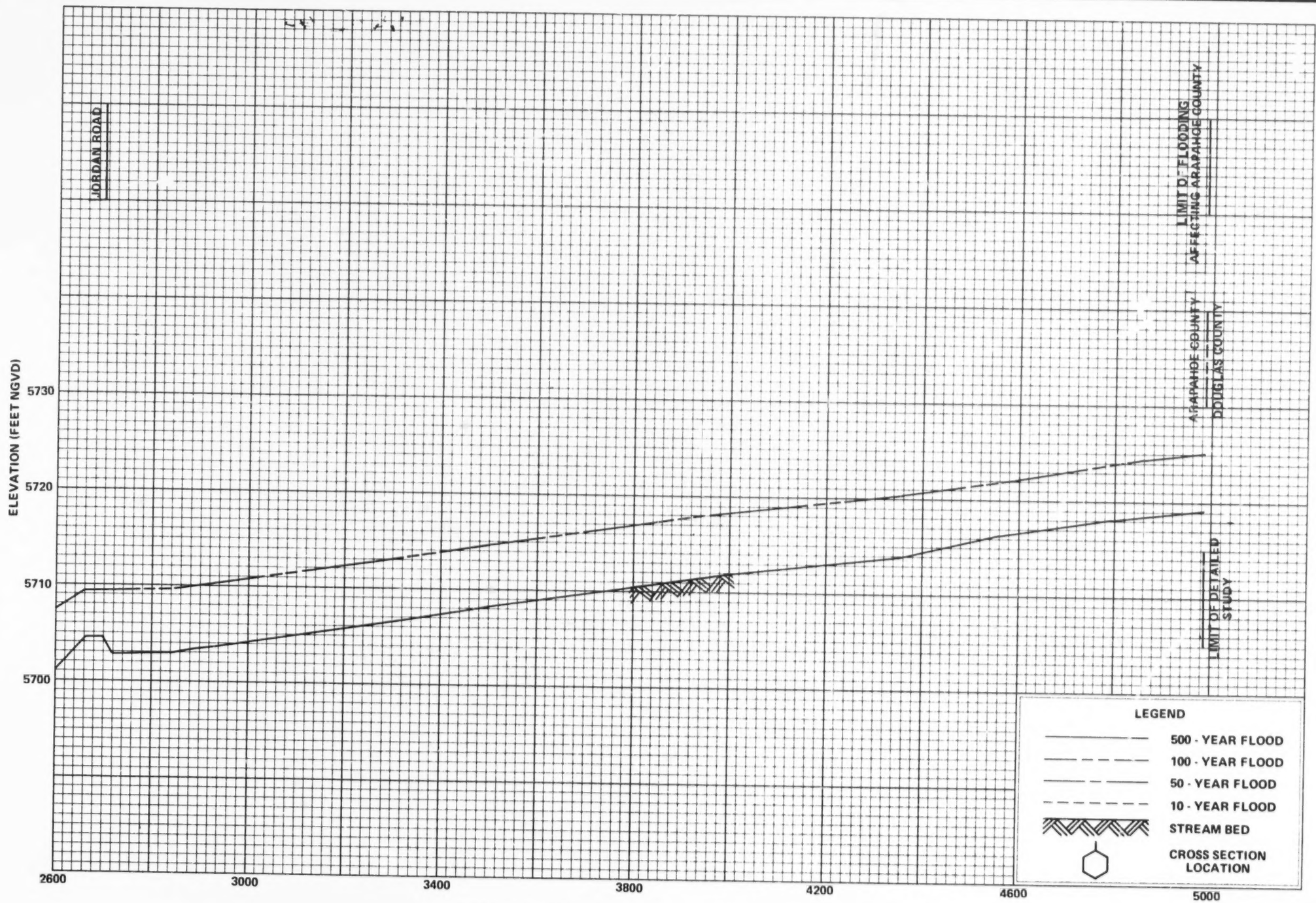
FLOOD PROFILES

HAPPY CANYON CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
AND INCORPORATED AREAS

83P



FLOOD PROFILES

HAPPY CANYON CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

ARAPAHOE COUNTY, CO
AND INCORPORATED AREAS

84P